

NETWORK WORLD

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DEC goes distributed in NAS plan

By Jim Brown
Senior Editor

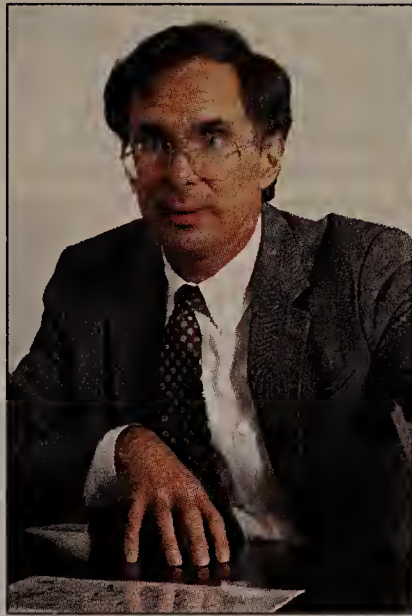
MAYNARD, Mass. — Digital Equipment Corp. last week unveiled software and specifications that offer developers two alternatives for building distributed applications under its Network Application Support (NAS) architecture.

DEC announced DECmessage-Q, the first commercially available version of its Process Activation and Message Support software, which the vendor previously used to develop custom applications for users.

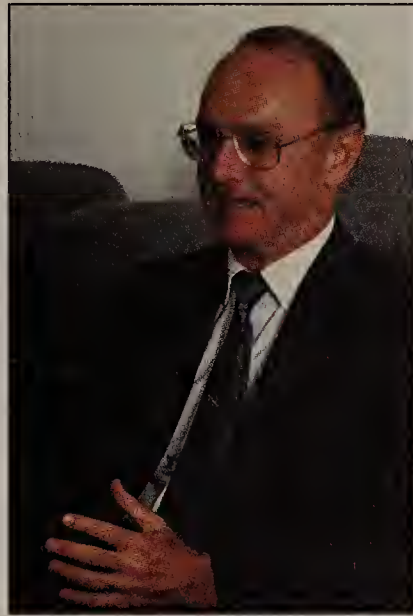
The client/server software enables applications on different systems to establish peer-to-peer links using electronic mail-type messages. It is being added as a component of NAS, a blueprint for building network applications for DEC and non-DEC systems.

DEC also announced its Application Control Architecture (ACA), a set of guidelines defining how developers can use object-oriented technology to build links between applications running on different systems. ACA uses remote procedure calls (RPC) to enable an application on one system to kick off a process on another.

DEC also said last week it will
(continued on page 62)



Art Olbert



Richard Newman

PHOTOS © 1990 DANILLE SWICK

IBM charts client/server progress, goals for future

By Paul Desmond
Senior Editor

SOMERS, N.Y. — In a recent briefing for *Network World*, IBM executives outlined the progress the company has made in achieving its client/server vision and discussed the technical challenges that lie ahead.

Officials of IBM's Client/Server Computing organization say they have been aggressively preaching their gospel to other IBM business units, which are building the product infrastructure upon which client/server applications will be supported. They say the company has made major strides in, among other

things, developing key net management capabilities as well as a distributed relational data base architecture required to make client/server a reality.

But work remains in some areas before IBM realizes its goal of giving desktop workstations seamless access to resources

IBM client/server building blocks, pages 54, 57.

across an enterprise net. Among the capabilities that must be provided are data base management system enhancements to support the integrity of distributed data, tools for building client/server applications and the client/server applications themselves.

Users agree that those capabilities
(continued on page 54)

IBM NetView users will get price relief

Firm bows to customer complaints about high cost of moving to recently unveiled NetView Version 2.

By Paul Desmond
Senior Editor

WHITE PLAINS, N.Y. — IBM this week will announce NetView price changes that will make Version 2 of the integrated network management system less expensive than it would have been under a pricing scheme announced in September.

On Sept. 5, IBM unveiled NetView Version 2 along with a new packaging structure that gave users the option of buying centralized, distributed or stand-alone NetView components. But many users, particularly those with large networks supporting multiple mainframes, complained that pricing for the components meant that an upgrade to Version 2 would cost them substantially more than Version 1.

IBM plans to remedy that tomorrow when it announces a new packaging and pricing structure for NetView Version 2, initial releases of which are due out late this month. Version 2 includes enhancements such as an OS/2-based graphical interface, LU 6.2 support and new automation features.

Actual prices under the new plan were not available last week because they had not been final-

ized. But sources close to IBM said users that might have paid as much as 60% more under the original pricing plan will now pay only 15% to 20% more for Version 2 than Version 1.

That was welcome news to customers such as The Travelers
(continued on page 59)

INSIDE



PHOTO © 1990 GARRY GEER

Kodak's Hudson on a year of outsourcing, page 27.

AT&T shifts sales tactics for Tariff 12

By Bob Wallace
Senior Editor

Recognizing that many of the nation's largest corporations are already locked into multiyear custom network arrangements, AT&T is gradually changing the way it markets Tariff 12 deals.

In an effort to bring more customers aboard while minimizing lead times and its own costs, AT&T is pressing potential customers to buy existing Virtual Telecommunications Network Service (VTNS) options as an alternative to developing new options.

The carrier is also imposing deadlines on the negotiation and finalization of Tariff 12 deals to reduce the time and effort involved in establishing a custom net arrangement.

"AT&T is most definitely pushing users toward existing
(continued on page 59)

NETLINE



AT&T CUSTOMERS UPSET by carrier's new QualNet support program. Page 2.

EC PLANS TO ELIMINATE nearly all restrictions on private networks in Common Market countries. Page 2.

US SPRINT PREPS to release powerful new version of its In-site customer-based net management system. Page 2.

FCC FORGES AHEAD with ONA plan, new rules for RBHC provision of enhanced services. Page 6.

PATENT OFFICE DEALS NEW blow to Olof Soderblom's token-passing patent. Page 6.

USER ALLIANCE for Open Systems formally joins COS, expects major growth in membership. Page 6.

FEATURE



Test shows wide range of fax server performance

By Charles Hanes
Special to Network World

Convenience — that's the main reason facsimile servers have surged in popularity in recent months. But there's another reason: Fax servers unite two popular technologies — local-area networks and facsimile machines.

Without fax connectivity, LAN users have to print out their documents and then wait in line at the fax machine.

Fax capabilities can be provided through fax cards for individual personal computers, of course. But fax servers have a big advantage over fax cards. They reduce the number of circuits needed to hook up individual personal computer fax cards.

For this article, seven fax server products were examined. The objective of the test was to compare the fax servers' performance in
(continued on page 38)



AT&T riles users over plan to levy QualNet service fee

Customers contend they have to pay hefty charge for services they previously received for free.

By Wayne Eckerson
Senior Editor

Network managers at many large companies are upset at AT&T's recent efforts to begin charging for network management services that customers claim they currently get for free.

In September, AT&T's Business Communications Systems unit announced QualNet Enhanced Support Program, a fee-based net management service under which AT&T will provide around-the-clock monitoring and troubleshooting of customers' multivendor private branch exchange-based networks.

But many AT&T customers have complained that QualNet,

which will cost them more than \$100,000 annually, is essentially a replacement for free service they have obtained until now through AT&T Business Communications Services' Customer Network Support (CNS) centers.

The CNS centers provide remote monitoring and troubleshooting of customers' AT&T Electronic Tandem Networks (ETN) and hybrid voice nets. AT&T recently informed CNS users that it will be shutting down the facilities on Dec. 31, leaving customers with little choice but to subscribe to QualNet.

"It's either this new expanded service or no service at all," said

(continued on page 60)

EC plan promises to relax restrictions on private nets

Would eliminate arduous rules in Common Market.

By Barton Crockett
Senior Editor

BRUSSELS, Belgium — The European Commission has nearly completed a proposal that would, if adopted, eliminate virtually all regulatory and technical restrictions on the construction of private networks within Common Market countries.

The regulatory initiative, called "A Council Directive on the Application of Open Network Provision to Leased Lines," is expected to propose rules that will require Common Market carriers to base prices for leased lines on cost, support pan-European one-stop shopping plans, eliminate

restrictions on how leased lines are used and require carriers to offer a standard set of leased-line services and interfaces throughout the continent.

If implemented as a European Community law, which could happen within a year, the directive would eliminate onerous technical and regulatory restrictions that have impeded the construction of pan-European private networks.

Some Common Market carriers, for example, prohibit users from running low-speed circuits to a hub in another country when that traffic is to be concentrated

(continued on page 62)

US Sprint preps upgraded Insite net mgmt. system

By Bob Brown
Senior Editor

KANSAS CITY, Mo. — US Sprint Communications Co. next month is expected to announce Insite II, the second generation of its network management system that will enable users to control most US Sprint services.

US Sprint will offer Insite II, which will provide far greater functionality than its predecessor, Insite I, in phases throughout 1991, according to documents obtained by *Network World*.

Introduced in July 1989, Insite I enables customers to monitor and administer US Sprint Virtual Private Network (VPN), UltraWATS and UltraWATS 800

dedicated access services from an on-site IBM Personal Computer XT, AT or compatible.

With Insite II, users can monitor all US Sprint services, with the exception of Integrated Services Digital Network offerings, from a single Apple Computer, Inc. Macintosh workstation supporting X Window System and the Open Software Foundation's Motif graphical user interface.

A US Sprint spokeswoman confirmed plans to announce Insite II, saying it will likely be introduced at the Communication Networks '91 conference in late January in Washington, D.C.

Insite II comprises modules

(continued on page 59)

Briefs

Domino's orders VPN net. US Sprint Communications Co. last week said it has received a three-year, \$11 million contract from Domino's Farm Services, a subsidiary of Domino's Pizza, Inc., for a nationwide virtual private net.

US Sprint's Virtual Private Network (VPN) service will link 1,500 corporate-owned Domino's Pizza stores, an unspecified number of franchises, the company's headquarters in Ann Arbor, Mich., 12 regional offices and 30 supply warehouses. The company hopes eventually to expand the network to include 337 stores and 13 supply warehouses abroad. US Sprint and Domino's Farm Services said the contract is the beginning of a strategic alliance under which the two companies will test and develop Integrated Services Digital Network applications.

Separately, US Sprint last week announced two other VPN contracts, one with Dayton, Ohio-based Reynolds and Reynolds Co. and the other with Englewood, Colo.-based Cellular, Inc., for undisclosed amounts.

onds, or 15 cents per call, the business customers providing the 900 service will be billed by AT&T in one-second increments at 0.5 cent per second, rather than the previous 30 cents for the first minute and 25 cents for each additional minute.

Mexican gov't sells TelMex. The Mexican government last week selected a consortium of three companies, including Southwestern Bell Corp., to take over control of the country's monopoly carrier, Telefonos de Mexico S.A. (TelMex). Southwestern Bell, France Telecom and the diversified Mexican company Grupo Carso will pay the Mexican government \$1.76 billion for a 20.4% stake in the carrier that represents a majority of the full voting stock. The new owners will be required to significantly upgrade TelMex's network and service by increasing the number of access lines by 12% a year for the next five years.

Hughes claims cellular advance. Hughes Aircraft Co., a subsidiary of GM Hughes Electronics Corp., last week announced its entry into the cellular communications market with new digital cellular products and services based on a proprietary transmission technique. The company said its new digital network and switching equipment provide a fifteenfold increase in capacity over existing analog cellular networks due to the use of Extended Time Division Multiple Access (E-TDMA), a proprietary transmission scheme.

NCR rejects AT&T offer. Dayton, Ohio, computer maker NCR Corp. last week rejected AT&T's \$90-a-share cash bid, setting the stage for a possible proxy battle with AT&T for control of NCR's board of directors.

If NCR does not find a white knight suitor to rescue it from AT&T, analysts said NCR can probably hold out only about five months before AT&T obtains a special meeting of NCR shareholders to vote out the board.

Recognizing that, NCR last week filed a lawsuit in U.S. District Court for the Southern District of Ohio alleging that AT&T filings in its offer are "false, manipulative and misleading."

AT&T, meanwhile, has garnered support from a number of banks that said they would be willing to fund AT&T's attempt to take over NCR.

Billing that makes cents. AT&T last week announced that, beginning in February, it will bill some 900 services by the second rather than rounding to the minute.

The new billing policy, which AT&T called a first for the 900 services industry, will pertain to AT&T MultiQuest Interacter and AT&T MultiQuest HICAP services.


After an initial charge for a minimum of 30 sec-

E-TDMA increases radio cell capacity by using digital signal processing to increase the number of telephone conversations within a typical cell. In addition, the Hughes products use distributed controlled switching, in which call control functions such as switch matrix controls, translations and resource management are distributed among several processors instead of a single unit. This helps protect against massive outages when a single switch fails and reduces capacity limitations because multiple switches process calls.

E-TDMA also eliminates three major problems that currently plague mobile telephone transmission: static, loss of signal in passing from cell to cell and failure to obtain connections due to jammed relays. E-TDMA exceeds recently approved industry goals that call for tripling the capacity of existing cellular networks, Hughes said.

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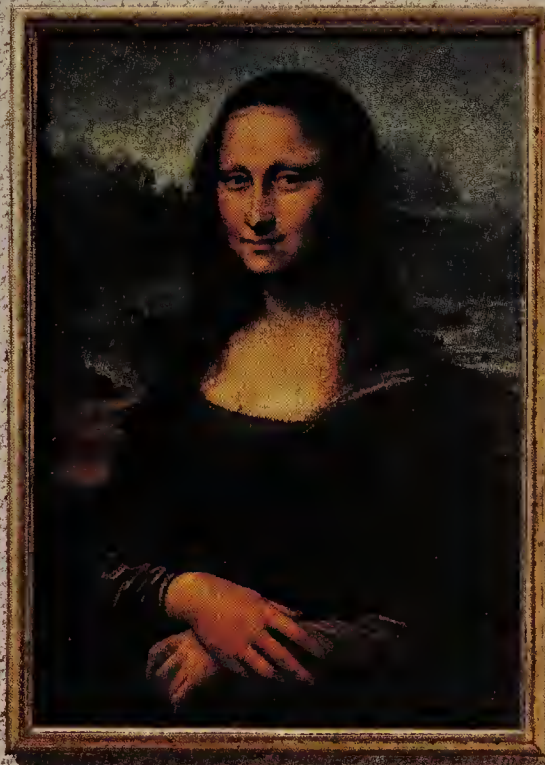


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Recognizing the full potential of networking is one thing—actually realizing it is another. To truly fulfill that potential, every component of your network needs to turn in a great performance. That's why IBM offers a complete range of leading-edge LAN products in the desktop networking field—giving you the broadest range of solutions available to continually advance your system's possibilities.

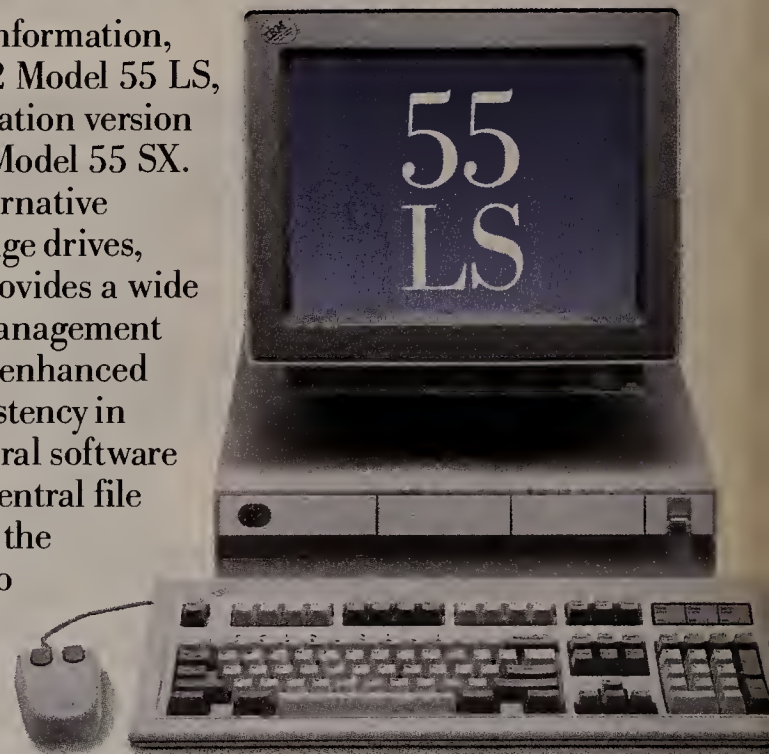
MANAGERS THAT TURN IN A GREAT PERFORMANCE.

At the heart of IBM networking are the members of the Personal System/2® family that act as high-performance LAN servers. The PS/2® Model 95 XP 486, IBM's sophisticated new 486™ computer, was especially designed to optimize network performance. The Model 95 features an Intel 33 MHz 486 processor or a 25 MHz 486 processor that's easily upgraded to 33 MHz, which quickens the pace of your LAN's operations. For your network's storage, not only are the Model 95's SCSI hard files lightning-quick, but the overall capacity is truly impressive—up to 1.6 gigabytes internally, and up to 8.96GB or more with IBM PS/2 External Enclosures. IBM also offers highly efficient, lower-cost server alternatives with the PS/2 Models 80 386 and 65 SX. All of IBM's PS/2 LAN servers feature the Micro Channel™ architecture, with its 32-bit data path and bus-mastering capabilities. The Micro Channel busmaster adapters allow you to expand your network's capabilities by adding multiple processors—like adding “computers” to your computer. It all amounts to highly reliable and powerful managers that inspire the same kind of performance from the rest of your network.

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Whatever your needs may be, IBM has PS/2s that can serve as excellent client stations. And if you want to keep a tight rein

on your network's information, IBM offers the PS/2 Model 55 LS, a medialess LAN station version of the best-selling Model 55 SX. A cost-efficient alternative to models with storage drives, the Model 55 LS provides a wide array of effective management controls, including enhanced data security, consistency in software levels, central software maintenance and central file backup. Not only is the Model 55 LS easy to hook up (it comes standard with a Token-Ring Network or Ethernet adapter), but should you need to modify your system, it's easy to upgrade with diskette and file storage devices.



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to advanced IBM leads the way.

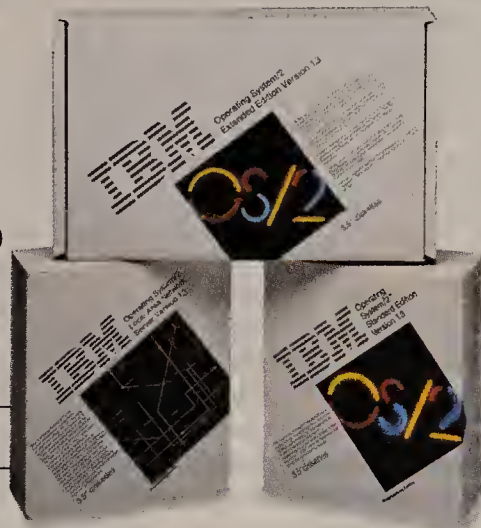
performance, less memory requirements, fewer DASD requirements and support for Adobe Type Manager™ fonts. And with support for 128 DOS requesters, LAN Server V. 1.3 can provide significant cost benefits for DOS network users. Compatibilities between IBM DOS LAN requester and the current version of Windows® 3.0 (LAN Manager 2.0 enhanced) have also been added, capping off the many ways IBM gives you greater flexibility in the LAN environment.

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STEP UP THE PACE WITH TOKEN-RING NETWORK.

To optimize the link between your LAN server and client stations, you need a hardware connection that gives you access to departmental and company data, as well as communication with your co-workers—in other words, you need access to a winner's circle: the IBM Token-Ring Network, the winner four years running of the *PC World Magazine* World Class Award. It's a reliable and flexible networking solution, one of the only connections with a data transfer rate of up to 16MB per second.



You can also diagnose, isolate and correct problems in one section of your LAN without affecting the rest of your network. A system you can build on, IBM Token-Ring Network provides a reliable connection that's as strong as your need to keep in constant touch with the people and information around you.

COMMUNICATE WITH HORSES OF A DIFFERENT COLOR.

Of course, IBM provides you with several ways not only to connect your PS/2 LAN to a multitude of mid-range and mainframe systems, but also to communicate with non-IBM systems as well. To conduct transactions such as hotel reservations, car rental and credit card authorization, an IBM communications adapter such as the IBM ARTIC Portmaster Adapter/A busmaster card, with the proper communications software, can link your PS/2 with other companies' computers. With an Ethernet adapter, you can also connect to most Ethernet LANs. The integrated communications options of IBM OS/2 Extended Edition software can also allow your PS/2 to send mail, transfer files and access applications on other systems concurrently. So it's easy to benefit from the strengths of an IBM network while still having access to the rest of the computing world.

With the many components that constitute a Local Area Network, it's plain to see why a LAN is only as strong as its weakest link. That's why the IBM total LAN solution—LAN servers, workstations, networking software, printing stations and Token-Ring Network—is simply without peer: because there are no weak links. To find out how IBM can keep your network ahead of the pack, contact your IBM Authorized Remarketer or IBM marketing representative. For a remarketer near you, call 1 800 272-3438.



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FCC provisioning proposal mirrors Computer III rules

Sets guide for RBHCs offering enhanced services.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The FCC last week proposed new rules for RBHC provisioning of enhanced services that are virtually identical to those that were struck down in court earlier this year and vowed to move ahead with its Open Network Architecture (ONA) plan.

The rules, which were summarized at a public meeting here, outline accounting, operational and administrative procedures the regional Bell holding companies must follow in offering enhanced services.

The Federal Communications Commission's proposal mirrors its 1986 Third Computer Inquiry decision, which was overturned earlier this year by a federal appeals court in California. That decision allowed the RBHCs to begin offering enhanced services through their telephone units, rather than through separate business units as had previously been required.

In addition, the FCC is also taking up the controversial question of states' rights, raised by the court, which found that the agency had preempted state control over enhanced services.

The agency said it will issue guidelines that establish boundaries between state and federal jurisdiction over enhanced services. Although the FCC provided

no details, it said the guidelines would enable the agency to preempt state regulation if state rules "thwart or impede the federal policy of permitting carriers to provide interstate enhanced services on an integrated basis with basic services."

Even though its Computer III rules did not meet legal muster once before, the FCC said it thinks it can collect enough evidence to justify them now. Agency officials said a healthy enhanced services industry will benefit users by spurring additional network investment and availability of new services, and vowed to press forward with previous policies.

"We are sending a clear message that an advanced and service-rich network is one of the principal objectives of the FCC," said Alfred Sikes, the agency's chairman.

Regardless of the outcome of its enhanced services proposal, the FCC unanimously voted to proceed with its ONA initiative. Under ONA, the RBHCs must give rival providers of enhanced services the same level of service quality and pricing they give their own operations. The RBHCs must also unbundle transmission offerings so that competitors can purchase only the features they need.

The FCC claims that its ONA plan was not affected by the court decision.

In June, a federal appeals court said the FCC had failed to compile enough evidence to justify its Computer III decision and had improperly sought to regulate intrastate enhanced services. The FCC claims that the court objected to the way in which it reached its Computer III decision, rather than to the decision itself, and vowed to press ahead.

The FCC proposal unveiled last week also added some new safeguards to protect against RBHCs cross-subsidizing their enhanced service operations with telephone revenue. As in the earlier decision, the RBHCs must file annual cost-allocation manuals showing expenses for telephone and enhanced services.

The primary difference between the Computer III rules and the new proposal is the addition of stronger auditing requirements to guard against cross-subsidies. Cost-allocation manuals will be reviewed annually by an independent auditor, but the FCC will impose stricter requirements on the auditors.

With the strengthening of its accounting safeguards, Sikes and other FCC officials said they are confident the agency can demonstrate that there is little risk in allowing the telephone companies to offer enhanced services through their telephone operations.

However, FCC Commissioner Ervin Duggan expressed some reservation about the proposal.

"Certainty should be justified by experience and not by hope, and I am troubled by the high degree of certainty expressed in areas where we don't have a track record," Duggan said. ▀

Trade group lobbies for key encryption standard

By Ellen Messmer
Washington Correspondent

ARLINGTON, Va. — The Electronic Mail Industry Association last week strongly urged the U.S. government to adopt a public-key encryption standard and to lift export restrictions on encryption products.

The 225-member trade association, asserting that failure to endorse a public-key encryption standard is harming U.S. competitiveness, publicly stated for the first time its position before a meeting of the Computer System Security and Advisory Board, a 12-member government/industry advisory board established by Congress.

Gary Levine, chairman of the trade association's Security Committee, said public-key encryption systems, in which users do not have to share the encrypt/decrypt key, offer simpler key management schemes than the widely used Data Encryption Standard (DES).

DES, which requires users to share a secret key to encrypt and decrypt data, is the standard endorsed by the National Institute of Standards and Technology (NIST).

In addition, Levine explained that public-key encryption, unlike DES, technically enables

each encrypted message to receive a digital signature, thus verifying the message's sender.

Digital signatures offer the promise of providing a legally acceptable substitute for written signatures required in contractual negotiations today, Levine noted. "Since more and more sensitive information is sent [electronically] every day, it's appropriate that we have a public-key encryption standard," he said.

Although public-key encryption was developed a decade ago in the U.S., NIST, which is responsible for establishing national standards, has failed to issue a national public-key standard.

Analysts blame tensions between NIST and the National Security Agency (NSA) over national security issues as the main reason for NIST's failure to release a standard.

Observers allege that NSA is fearful that widespread use of public-key encryption will hamper its intelligence-gathering mission. Both NIST and NSA are reluctant to discuss the matter.

The failure of this country to endorse a standard is having serious repercussions, Levine said. Public-key encryption systems are not expected to come into widespread use until NIST sets
(continued on page 61)

Patent Office turns down Soderblom claims, again

By Bob Brown
Senior Editor

WASHINGTON, D.C. — The U.S. Patent and Trademark Office last week issued its strongest and broadest rejection yet of key claims within Olof Soderblom's 1984 token-passing patent.

The Patent Office reaffirmed an action issued in July in which it determined that the closed-loop token-passing scheme on which the IEEE 802.5 token-ring standard is based was invented by AT&T Bell Laboratories engineers in the 1960s, not Soderblom ("Patent Office sticks by its Soderblom patent ruling," *NW*, Aug. 20).

Repeat request

Even though the Patent Office rejected key claims in Soderblom's patent during the summer, a repeat request for reexamination was filed on behalf of an anonymous vendor.

The vendor was concerned that the earlier rejection was not

based on arguments sound enough to withstand Soderblom's inevitable response to the Patent Office.

In this decision, the Patent Office rejected nine Soderblom patent claims relevant to token ring,

According to industry observers, the latest Patent Office action could encourage token-ring and FDDI product vendors to discontinue their technology licenses with Soderblom.

"If the Patent Office continues to reject these claims, Soderblom will lose his ability to collect royalties and that will cause the prices of these systems to be reduced by at least the amount of the royalty payment," said

"If the Patent Office continues to reject his claims, Soderblom will lose his ability to collect royalties."

▲▲▲

stating in much clearer terms its rationale for doing so.

The action questioned why some 50 vendors that are Soderblom licensees ever agreed to pay royalties. It reads at one point: "Did the licensees agree to the Consent Agreements due to the cost of litigation in an infringement suit when weighed against the cost of licensing?"

Wayne Harding, an attorney with the Houston law firm of Arnold, White & Durkee, which requested the patent reexamination on behalf of an anonymous vendor.

Soderblom has two months to respond to the Patent Office action. In a telephone interview with *Network World* last week, he said he will likely respond by
(continued on page 59)

User Alliance signs on as part of COS, lays out plans

Hopes to increase its dues-paying members.

By Ellen Messmer
Washington Correspondent

MCLEAN, Va. — The User Alliance for Open Systems last week announced that the loosely knit coalition has followed through with its plan to join the Corporation for Open Systems International (COS) and is now a COS user group.

The User Alliance, previously the Houston 30, now boasts eight official dues-paying members, and User Alliance leaders say they hope to bring in hundreds more in the near future.

Bud Huber, chairman of the User Alliance and manager of advanced networking integration for Hughes Aircraft Co., said 835 individuals, representing roughly the same number of companies, have supported the User Alliance on an informal basis.

Foreign companies account for 10% of that number, said Huber, who spoke during a briefing at COS headquarters here.

"Until today, [the User Alliance] was nothing but a coalition of users," Huber said. "It has become abundantly clear to all of us

that this movement had to be formalized."

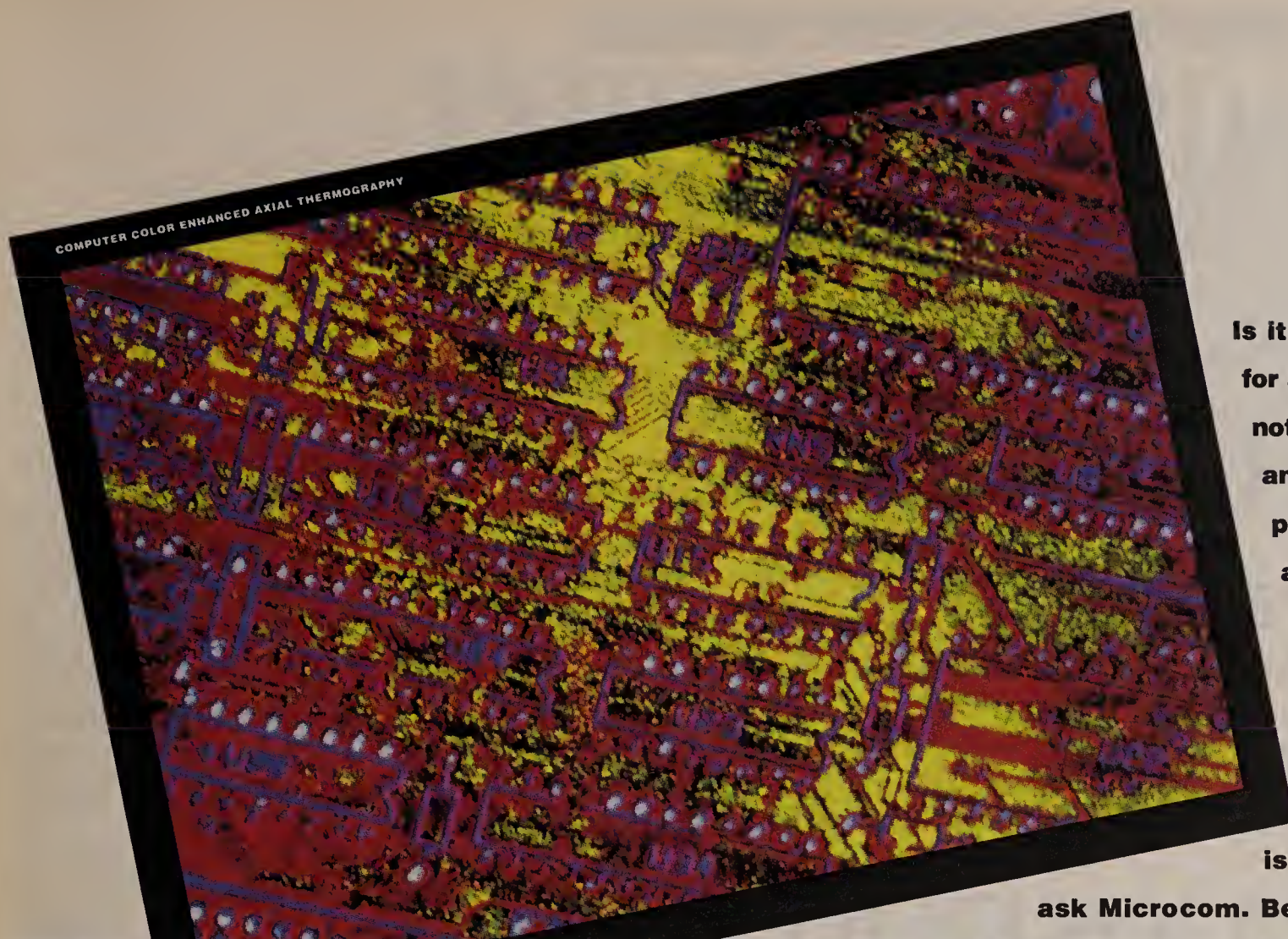
During the past year, the User Alliance burst into the limelight as a grass roots group of users from large corporations venting frustration at the lack of vendor and user support for open systems standards.

Huber, as well as other leaders in the open systems movement, say open systems will give users freedom from proprietary vendor systems, leading to global enterprisewide computing and information sharing.

Because many members in the User Alliance deem open systems implementation critical to their company's business success, User Alliance leaders have blasted the slow pace of the development of Open Systems Interconnection products and the acceptance of OSI by the majority of users.

But having garnered a ground swell of support from other users, the User Alliance now faces the challenge of establishing an official membership base and acting as an effective agent of change.

(continued on page 61)



SOME INSIGHT INTO THE NEW MICROCOM LAN BRIDGE PRODUCTS

Is it too much to ask for a LAN bridge that not only provides T1 and X.25 data compression, but the ability to mix and match local and remote bridges in a single chassis? Frankly, the answer is yes. Unless you

ask Microcom. Because, in a nut-

shell, that's exactly what our latest release of the Microcom LAN Bridge™ (MLB™) does. And, no other LAN bridge on earth can compete.

First, some quick insight into data compression. We practically invented it. In fact, the Microcom Networking Protocol™ (MNP®) remains the *de facto* standard for data compression in

modems, and is installed in well over 1 million units, worldwide.

Now, we've gone even further. Because our T1 compression feature provides up to a 4-to-1 performance increase on any speed link up to, and including, T1 service. Which translates to 1.5 Mbps on a 386 Kbps fractional T1 link, if you want to get technical, or incredibly high throughput if you don't. Any way you look at it, though, our T1 compression translates into unparalleled performance without the expense of T1 service.

For your present or future needs, we've incorporated X.25 compression, as well. In fact, we're the only company that offers an X.25 compressing bridge for your multinational and private networks.

And now for something completely different. The new MLB lets you combine both local and remote capabilities in a single unit to handle both types of traffic. Which eliminates the need and the expense of having separate units in sites that handle both local and remote network connections. In practical terms, this means you now have the option of killing two birds with one stone.

Now, a quick word on a very important topic: network management. You need it. Which is why the MLB also features our new Microcom Management Station™, a comprehensive, SNMP-based network management system that controls, configures, and maintains all the bridges on your network.

One final insight. As much as we'd like to say our MLB outperforms any comparable LAN bridge in existence today, we honestly can't. Because there aren't any.

Call 1-800-822-8224

FREE GUIDE

If you are in the market for LAN internetworking devices, you will want a copy of our free guide "LAN Internetworking Options". Please call us now at our toll free number 1-800-822-8224.

MICROCOM LAN BRIDGE PERFORMANCE SUMMARY

Combines both local and remote LAN bridges in one unit

Achieves 4:1 increase in data transfer rates up to 2 Mbps

Utilizes link speeds from 9600 bps to T1 rates

X.25 Data Compression

Handles multiple wide area and local area connections

Expandable architecture for easy upgrades



SHOULDN'T YOU BE COMMUNICATING
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See The FAXNeT Form on Page 24

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When choosing an Ethernet LAN, simply ask yourself one question.



Do I want a headache?

Or not?

**The new HP EtherTwist Hub
takes the pain out of networking.**

Running a LAN over your phone lines should be easy. But the mess of cables on the left is the way most Ethernet LANs connect with your wiring closet: one cable for every PC.

Hewlett-Packard has a better way.

The HP EtherTwist Hub connects as many as 12 PCs into a LAN, using a single cable. When you're ready to grow, simply plug in another Hub.

That way, you can control your growth in easy 12 PC increments, instead of 120. Or instead of smaller hubs that still need one cable linking every single computer to the wiring closet.

Of course, the HP EtherTwist Hub

supports 10Base-T, and is compatible with Novell and LAN Manager. So call **1-800-752-0900, Ext. 2006** for more information on the HP EtherTwist LAN. You'll see how HP has turned a difficult choice into a very easy one.



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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

“If the NCR salesman can add AT&T’s products and services to his sales portfolio and sell it as a turnkey network solution, then I think that might succeed. If AT&T tries to sell computers, they will fall flat on their faces.”

Duncan Hare
Program director
for global network strategies
Meta Group
Westport, Conn.

EDS boosts vertical and horizontal market skills

Vendor hopes to turn expertise into more sales.

By Bob Brown
Senior Editor

DALLAS — Electronic Data Systems Corp. (EDS) has been on a roll this year, signing up new customers and forming strategic partnerships that promise to generate billions of dollars in revenue for years to come.

But more importantly, EDS’ successes are providing the \$6 billion systems integration and facilities management pioneer with diverse vertical market expertise that it hopes to turn into marketable systems integration skills.

This is particularly true in cases where a customer, such as Cummins Cash and Information Services, Inc. (CCIS), transfers information systems (IS) and networking staff to EDS as part of the deal. As a result of such wins, EDS makes itself more attractive to other users within those vertical industries.

“We have the expectation that our people know as much about the customer’s business as they do about technology,” said Barry Sullivan, director of corporate marketing for EDS.

During the past few months, the General Motors Corp. subsid-

iary has won substantial systems integration contracts in the energy, transportation and government sectors, among others. It has also formed strategic alliances with ASK Computer Systems, Inc., a maker of software for the manufacturing industry, and Compression Labs, Inc., a vendor of videoconferencing and other equipment.

“EDS’ growth strategy is and has been centered primarily around sales to new customers, but we also like to expand our relationships with our 7,000 existing customers” by broadening the company’s horizontal service offerings, Sullivan said.

By focusing on vertical markets and enriching its technical expertise via strategic partnerships, EDS is attempting to differentiate itself from a growing pack of systems integration, facilities management and outsourcing rivals that include IBM and Digital Equipment Corp.

EDS officials said the primary mission of its rivals, for the most part, is selling products. Focusing on their customers’ businesses is of lesser concern.

“EDS [pioneered] this [sys-
(continued on page 10)]

INDUSTRY BRIEFS

Novell attributes growth to software. Novell, Inc. last week reported revenue of \$497.5 million for fiscal year 1990, which ended Oct. 27. That amount reflected an 18% increase over 1989 revenue of \$421.9 million. Novell’s net income for 1990 was \$94.3 million, a 94% increase over 1989’s income of \$48.5 million.

The local-area network vendor’s fourth-quarter 1990 revenue was \$140.5 million, a 27% increase compared to the corresponding period in 1989. Fourth-quarter net income jumped to \$32.6 million, compared with \$14.3 million in 1989.

Ray Noorda, Novell’s chairman, president and chief executive officer, attributed the company’s growth to strong sales of software products, in particular the success of the NetWare 386 network operating system, which grossed more than \$90 million in sales during its first year of availability.

Novell’s gradual phasing out of its hardware products and its increased success in international markets added to its outstanding year, Noorda said.

Partnership to develop IBM 3270 application.

Dallas-based Harris Adacom Corp. last week announced an agreement with Mountain View, Calif.-based Network Computing Devices, Inc. under which the two companies will jointly develop software to provide IBM 3270 terminal emulation for Network Computing Devices’ X terminal, which is designed to run the industry-standard X Window System graphical user interface.

The jointly developed software will enable the terminal user to access an IBM mainframe over an Ethernet local-area

(continued on page 10)

Hub and bridge/router vendors team up

• March •

SynOptics Communications, Inc. signs agreement with Retix under which SynOptics will sell remote and local Ethernet bridge modules based on Retix technology.

• April •

Cabletron Systems, Inc. and cisco Systems, Inc. agree to codevelop router module based on cisco Systems technology to plug into Cabletron’s Multi Media Access Center hub.

SynOptics signs joint technology agreement with cisco Systems to incorporate cisco Systems router technology into SynOptics’ LattisNet hub.

Chipcom Corp. signs codevelopment agreement with cisco Systems for routing module designed for Chipcom’s ONLine System Concentrator.

Hewlett-Packard Co., which sells wiring hubs as part of its EtherTwist product line, announced OEM and technology transfer agreement with Wellfleet Communications, Inc., a maker of multiprotocol routers.

• November •

Ungermann-Bass, Inc. announces that it will resell Advanced Computer Communications’ Series 4000 bridge/routers for use with its Access/One hubs. ACC is also developing bridge/routing module for Access/One.

David Systems, Inc. signs agreement with Retix whereby David Systems will resell Retix 2265 and 2265M Local LAN Bridges.

3Com Corp. announces it will resell SynOptics’ LattisNet hubs and develop routing capabilities for it, possibly based on 3Com NetBuilder routers.

GRAPHIC BY SUSAN J. CHAMPENY

Hub, internet firms profit by partnering

Wiring hub vendors team with bridge and router companies to broaden capabilities of products.

By Bob Brown
Senior Editor

Intelligent wiring hub vendors have entered into a series of strategic relationships with LAN internetworking suppliers over the past year to broaden the capabilities of their products.

By partnering with companies that provide router and bridge functions, wiring hub makers are able to offer users the ability to consolidate several local-area network functions into one site and manage them from a single network management package.

The agreements have become attractive to internetworking suppliers because the suppliers get a guaranteed base of users to whom they can pitch their products. In exchange, the internetworking vendors develop a board-level implementation of a bridge or router designed to fit in a specific wiring hub vendor’s hub.

Meeting user needs

The spate of partnerships crafted over the past year indicate that internetworking vendors recognize user demands to centralize network devices in the wiring closet instead of buying more expensive stand-alone devices, according to Tom Erickson, a research analyst at the investment firm of Wessels, Arnold & Henderson in Minneapolis.

The pacts also provide internetworking vendors with access to a market that is expected to

grow 50% annually through 1993, Erickson said.

Roger Bertman, vice-president of marketing at Ungermann-Bass, Inc., which recently signed a technical development and marketing agreement with router maker Advanced Computer Communications, said the bottom line is that these agreements enable hub vendors to provide internetworking products faster than developing them on their own.

These agreements enable hub vendors to provide internetworking products fast.

▲▲▲

“No one [vendor] company is capable of delivering the technology to establish a LAN-based corporate network,” he said. “Routing technology is very complex. That’s why we’re seeing so many agreements between hub and router vendors.”

Hub vendors, in their effort to bring more network functionality into their domain, have also penned agreements with terminal server vendors and makers of net analysis tools to develop modular versions of their devices
(continued on page 10)

People & Positions

MCI Communications Corp.’s Eastern Division has named **Howard Taylor** to the newly created position of vice-president of national accounts.

Taylor will direct the company’s sales and marketing program for commercial, carrier and state government accounts in the New York and New England regions.

Previously, Taylor was vice-president of sales for Quotron Systems, Inc., a supplier of on-line financial information to the securities industry.

MCI’s Eastern Division is one of the company’s four geographic divisions.

Mary Coleman has been named vice-president of marketing at **McData Corp.**, a Broomfield, Colo., manufacturer of local-area network-to-mainframe communications devices, channel extenders and other network equipment.

She will be responsible for directing all aspects of McData’s marketing efforts, including product marketing, distribution strategies as well as other marketing programs.

Previously, Coleman was cofounder and vice-president
(continued on page 10)

Hub firms profit by partnering

continued from page 9

to be plugged into intelligent hubs.

Not surprisingly, the leading hub and router vendors have been most active in forming co-development and comarketing teams (see chart, page 9).

Leading router vendor Cisco Systems, Inc., for example, signed agreements in April with leading hub makers Cabletron Systems, Inc., SynOptics Communications, Inc. and Chipcom Corp. to build routing modules for their hubs.

Meanwhile, Cabletron also signed an agreement with Retix, a bridge maker, and SynOptics recently agreed to let 3Com Corp. resell its LattisNet hubs in conjunction with 3Com's NetBuilder routers.

"The most expedient way to provide our customers with routing within the wiring closet was to team up with one of the leaders in the routing industry," said Chris Oliver, director of engineering for Cabletron Systems. Oliver said the module that Cabletron is developing for its Multi-Media Access Center (MMAC) with Cisco Systems is scheduled to be available in the first quarter of 1991.

Boon for users

Hub and router vendors said

their agreements significantly benefit end users.

"Ultimately, better network management is the primary concern," Erickson said.

Initially, hub and router vendors are enabling users to manage routers and hubs from a central net management station using Simple Network Management Protocol (SNMP) hooks built into the net devices, Erickson said.

Service and support should also improve thanks to these partnerships, Erickson said.



They are also working to integrate one another's devices more fully under their own net management systems, which may provide even more sophisticated net management than SNMP, he said. This promises to create a level of network management integration previously unheard of in the LAN market, observers said.

Service and support should also improve thanks to these re-

cently formed partnerships, Erickson said.

"There should be less finger pointing when you have multiple vendors working with one another," he said.

Net managers at small and midsize businesses may benefit the most from the hub and router vendor deals since these users tend to seek out one-stop shops, Oliver said.

Not all users may be satisfied with the close-knit agreements struck between hub suppliers and internetworking vendors.

Some observers say a hub vendor that forms an alliance with a router vendor, for example, is dictating router equipment selection on its behalf.

While a user could still buy any router and hub and link them, vendors said a hub vendor that forms an alliance with a router vendor should be able to provide better network management integration of the hub and router products.

Vendors said, however, as long as both the router and hub vendors adhere to industry standards, users will have no problem mixing and matching hubs and routers.

"Our desire is not to preselect any vendor as the solution; we want to leave that up to the customer," said John Morgridge, Cisco Systems' president. "We want to be the ubiquitous router technology supplier in the marketplace."

Other observers said there is some question about whether users will even want to put routing into the wiring closet.

"I'm not sure how quickly net managers will move to put complex routing technology in the hub," said Susan Frankle, an analyst at International Data Corp., a Framingham, Mass., market research firm. There are sure to be concerns that the integration of routing into the hub might impair the performance of the entire hub, she said.

According to Bill Lanfri, SynOptics' vice-president of business development, there shouldn't be any more concern than usual about the hub being a single point of failure. In fact, he said, more hubs are being pushed so close to the desktop that even "if one hub goes down, it won't necessarily mean the whole network will go down." □

Industry Briefs

continued from page 9

network. Under the agreement, Harris Adacom will market the X terminal packaged with the IBM mainframe software.

Delivery is expected in the second quarter of 1991.

TSI makes acquisition.

TSI International, Inc., a Wilton, Conn.-based supplier of mainframe-based electronic data interchange software, recently announced the acquisition of Foretell Corp. from Purchase, N.Y.-based JWP, Inc. for an undisclosed price.

Foretell offers a microcomputer-based EDI translation package named ESP II, which will continue to be marketed under the same name.

Codex sells T-1 wares.

Codex Corp.'s Systems Division and Phoenix microsystems, inc. last week announced a one-year agreement under which Codex will resell Phoenix microsystems T-1 transmission equipment and communications analyzers.

The Systems Division, which is the systems integration unit of Codex, will take equipment such as Phoenix microsystems' 3250 matrix switch and T-View fractional T-1 switch and combine them with Codex-manufactured equipment for specific customer projects.

Gandalf forms new division.

Ottawa-based communications software and hardware firm Gandalf Technologies, Inc. last week established a new company, Gandalf Mobile Systems, Inc. (GMSI), which will focus on mobile communications markets.

GMSI, which formerly operated within Gandalf as the Computer Dispatch Systems division, has as its core product the company's Cabmate System, a computerized dispatching system now sold throughout North America.

The two-way Cabmate System transmits dispatcher's information over assigned radio signals to a cab's installed data terminal.

Gandalf, which picked up experience as a subcontractor for the Canadian mobile satellite consortium Telesat Mobile, Inc. this year, plans to market integrated dispatch systems to courier and trucking firms worldwide.

Herb Woods, formerly the Computer Dispatch Systems' general manager, will head up GMSI and expand the company's marketing efforts to Australia and Europe.

Separately, Gandalf last week reported first-quarter 1991 revenue of \$39 million, an increase over 1990 first-quarter revenue of \$37 million.

Net income was reported at \$344,000, in comparison with a net loss of \$1.18 million in the corresponding quarter last year. □

EDS boosts market skills

continued from page 9

tems integration and facilities management] business, but competitors have started making inroads," said John Torres, vice-president of The Ledgeway Group, a Lexington, Mass., market research firm specializing in service and support issues.

"EDS has made up its mind to change the way it does business, and it's been successful," Torres said.

IBM's celebrated contract win last year to run Eastman Kodak

responsibilities. A leadership council oversees the business units and focuses on long-term planning.

"Buyers by and large want to know two things," Sullivan said. "What do you know about their industry and what relative experience do you have in it. The best way to serve the market is going to be by having your primary offerings aligned with your customers' industries."

EDS' recognition of those

The company, however, has continued to pick up new business at a furious pace. Recent victories include: a 10-year, \$90 million facilities management contract with CCIS; a 10-year agreement to oversee the IS and communications needs for Cyprus Minerals Co.; and a five-year agreement to provide computer and communications systems for Marine Spill Response Corp.

When customers hand their data center and related operations over to EDS, they often do so with the understanding that they are entering a long-term partnership, users said.

"This agreement teams Cummins' acknowledged transportation expertise with EDS' unmatched information technology capability," said Leo Krulitz, president of CCIS. "The result is a world-class partnership."

EDS is attempting to foster this spirit by making other cultural changes, including better balancing of its GM business with its non-GM business, an EDS spokesman said. This is being done in order to firmly establish EDS' independence, he said.

Whereas EDS counted on GM for 75% of its business a few years ago, it now accounts for about 55%. EDS hopes to have a 50-50 balance within a year or two, a company spokesman said.

"We want to get into technology partnership-type relations with all of our customers, not just GM," he said. □

People and Positions

continued from page 9

of NETBASE, a developer of SQL data base computers.

Coleman replaces **Bruce Brown**, who went to **Ungermann-Bass, Inc.**

As part of a management reorganization related to its recent acquisition of Ingres Corp., **ASK Computer Systems, Inc.** last week named **Dennis McGinn** to the new position of vice-president of worldwide sales and marketing.

Reporting directly to **Sandra Kurtzig**, chairman and chief executive officer of ASK, McGinn will have responsibility for the worldwide sales and marketing efforts for both ASK's Application Products Division and its Ingres Products Division.

Previously, McGinn was general manager of Hewlett-Packard Co.'s Industry Marketing Group in Cupertino, Calif.

George Paul Dreyer was named president of **Oracle Complex Systems Corp.**, the Arlington, Va., systems integration subsidiary of relational data base software maker Oracle Corp. Dreyer will report to **Lawrence Ellison**, president and chief executive officer of Oracle. Previously, Dreyer was vice-president and general manager of commercial programs for Oracle Complex Systems. □

“EDS has made up its mind to change the way it does business, and it's been successful.”



Co.'s data center — a bid that EDS lost — made it clear to EDS management that revisions needed to be made to the company's "arrogant image and aging organizational structure," Torres said.

The changes started about a year ago, when the company formed 38 strategic business units, 23 of which are focused on vertical, non-GM markets. The units are headed by presidents that have the freedom to sign new business deals at their discretion and have separate profit and loss

needs started showing up late this summer when the company celebrated what one spokesman described as "the biggest sales spurt in the company's history."

Within a period of a few weeks, EDS drummed up \$6 billion in business, about \$4 billion of which was to come from a deal to enter the airline reservation business with partner Continental Airlines Holdings, Inc.

The deal has since collapsed, landing one of the few blows the company has experienced in recent memory.

TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

AT&T last week said it has filed 81 Virtual Telecommunications Network Service options to date, business that analysts say will represent more than \$1 billion in recurring revenue during the next three to five years.

Carrier Watch

The Georgia Public Service Commission recently gave **BellSouth Corp.** permission to conduct a one-year trial of caller identification service.

The carrier expects to roll out caller ID to most service areas in Georgia by the second quarter of 1991.

Residential customers will pay \$6 per month, plus the purchase price of the caller ID unit, which typically costs between \$30 and \$100.

Single-line business customers can also purchase the caller ID service for \$9.50 per month.

Advanced Telecommunications Corp. (ATC), a carrier in Atlanta, recently received approval from state regulators to offer long-distance services to business and residential customers in South Carolina.

ATC will offer 1-plus, out-bound WATS, calling card and international calling services, as well as 800 service, a multi-location calling plan and other calling programs throughout the state.

Pacific Bell and Groupware Authors, a Santa Cruz, Calif., software firm, announced an agreement to jointly develop and market application software for use with the carrier's Integrated Services Digital Network Centrex service. Under the agreement, Pacific Bell and Groupware Authors will announce early next year software for ISDN-based distributed computing applications. ■

AT&T 800 vs. Megacom 800-Overseas

Country	First 10 hours		Next 25 hours		Over 35 hours	
Australia	\$81	\$77	\$75	\$71	\$69	\$65
Belgium	84	80	78	74	72	68
Denmark	90	86	84	80	78	74
France	90	86	84	80	78	74
Germany	84	80	78	74	72	68
Indonesia	114	110	108	104	102	98
Ireland	84	80	78	74	72	68
Israel	102	98	96	92	90	86
Italy	90	86	84	80	78	74
Japan	99	95	93	89	87	83
Korea	105	101	99	95	90	86
Spain	96	92	90	86	84	80
Switzerland	90	86	84	80	78	74
U.K.	72	68	66	62	60	56

■ = AT&T 800 ■ = Megacom 800-Overseas

GRAPHIC BY SUSAN SLATER

SOURCE: AT&T, BASKING RIDGE, N.J.

FCC explains basis for its Oct. rate-of-return decision

High percentage needed to ensure development.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Almost two months after reaching a controversial decision to lower the local exchange carriers' rate of return, the Federal Communications Commission last week finally released the full text of its order explaining its rationale.

Although the October decision to lower the local carriers' rate of return from 12% to 11.25% will translate into savings for customers next year, the plan was attacked from all sides. The rate of return is the profit percentage carriers are allowed to earn over their costs.

Several major user groups, including the International Communications Association and the Ad Hoc Telecommunications Users Committee, complained that the carriers are pricing services well above cost and that the earnings level should have been lowered even further.

Local carriers say the decrease puts them dangerously close to being unable to upgrade or invest in the network and that any more severe cuts could cripple them.

The carriers had argued that implementing new technologies increases their business risk and, therefore, makes them less attractive for investors. Having a higher rate of return would negate this perceived negative effect of new technology deployment, they said.

The debate highlights a long-

running dilemma faced by regulators — to find a balance between permitting fair profits for telephone companies so they can attract shareholders and protecting consumers from excessive rates.

The problem has taken on more ominous overtones during the past few years as some lawmakers have begun to view telecommunications networks as key to the future prosperity of the U.S.

Regulators have to ensure that telephone companies will have a

The carriers had argued that new technologies increase their business risk.

▲▲▲

profit level high enough so they can invest in modern technologies that will enable U.S. businesses and users to enjoy the full benefits of the public network.

After weighing all of these factors and pouring through hundreds of pages of comments from expert witnesses, telephone companies and user groups, the FCC finally struck what it deems to be a reasonable deal. It determined that local carriers' costs for capi-

(continued on page 18)

Porsche implements ANI, CallPath/400

Carmaker reduces by 20% the time needed to handle calls from dealers to central help desk.

By Bob Wallace
Senior Editor

RENO, Nev. — Porsche Cars of North America, Inc. is using automatic number identification (ANI) and a prereleased version of IBM's CallPath/400 PBX-to-host software to enhance a help desk application used by its 270 U.S. dealers.

Porsche, among the first to use CallPath/400 with a Northern Telecom SL-1 private branch exchange, said the system has enabled it to reduce by 20% the time needed to process each of the 300 calls its help desk fields each week.

"We're implementing new products and technologies wherever possible to streamline operations and better support our dealers," said Steve Backe, computer operations and telecommunications manager for the car company.

Porsche began its efforts to enhance its help desk application months ago when it cut over an AT&T Integrated Services Digital Network Primary Rate Interface (PRI) link tying its Meridian SL-1 — configured as an automatic call distributor (ACD) — to an AT&T point of presence here.

The company tested ANI before implementing Northern

Telecom's Meridian Link software on its switch and while it awaited delivery of CallPath/400 software.

Meridian Link software enables the SL-1 to communicate with a variety of computers. CallPath/400 software is used in conjunction with Meridian Link to functionally integrate the SL-1 and IBM's Application System/400.

When a dealer calls the help desk, the Meridian Link SL-1 software on Porsche's SL-1 creates messages such as arrival and connection records, which are sent to the AS/400. The arrival records contain the ANI and the trunk on which the call is arriving.

The ACD sends the arrival records and a connection record telling the AS/400 which technician will get the call over a Synchronous Data Link Control link to the AS/400 running the CallPath/400 software. The software re-formats the information for the help desk application on the minicomputer.

The AS/400 sends the customer profile to the agent as the call arrives. If the AS/400 cannot match the ANI with a customer file, a blank file is passed to the agent, who then keys in the cus-

(continued on page 14)

WASHINGTON UPDATE

BY ANITA TAFF

AT&T, MCI settle ad battle out of court. AT&T and MCI Communications Corp. last week decided to end a bitter public battle by settling out of court on a dispute over telemarketing and advertising practices. In October 1989, MCI sued AT&T; and two weeks later, AT&T countersued MCI. Each carrier alleged that the other was running deceptive and misleading ads. The two carriers also claimed that some of their customers were being switched to their rival's long-distance service without consent, a practice known as slamming.

Monetary terms of the settlement were not made known last week, but when the lawsuits were filed, each firm asked for damages equal to court costs and the amount of business that had been lost due to unscrupulous practices. MCI had estimated that damages could run in the hundreds of millions of dollars.

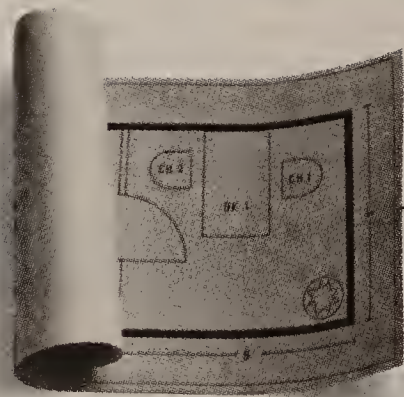
As part of the settlement, the carriers agreed to press the Federal Communications Commission to adopt a set of telemarketing standards to ensure that customers are not switched to other carriers without consent. They suggested four primary safeguards for consumers, including requiring customers to sign an authorization card to switch carriers.

Currently, local carriers are notified verbally when customers want to change the long-distance carrier serving their home.

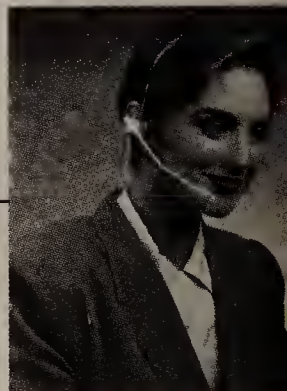
(continued on page 18)

1984 Sprint begins construction of the first and only coast-to-coast 100% digital fiber optic network. 1985 Sprint introduces the world's first virtual private

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1988 Sprint awarded 40% of Federal Telecommunications System 2000 contract. 1989 Sprint completes the world's first and

network. 1986 First transcontinental fiber optic call transmitted by Sprint. 1987 Eight million FÔNCARDS™ distributed in first year of introduction.

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a pay phone. And you don't have to be a Sprint customer. Of course, once you've experienced the sound quality of 100% digital fiber optics, we're sure you'll want to become one.

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want more information. And if you'd rather not have 200 people in your office at the same time, we understand. We'll be glad to accommodate three or four.



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largest privately-owned transatlantic fiber optic cable. 1990 Sprint announces the first commercial video services to the Soviet Union.

HMO plunks down \$2m for Octel voice mail network equipment

Net will be used in Kaiser Permanente's S. Calif. facilities.

By Bob Wallace
Senior Editor

MILPITAS, Calif. — Kaiser Permanente, a health maintenance organization (HMO), last week said it will buy \$2 million worth of Octel Communications Corp. voice processing systems that will be networked throughout its Southern California medical facilities.

Kaiser Permanente expects the voice mail network, which will link 17 medical

centers, administrative and medical offices in Southern California, will improve patient service and enhance communications among doctors at the different sites.

Kaiser Permanente will install one Octel voice processing system at each site and will employ the vendor's AspenLink analog networking protocol to deliver messages over dial-up lines between the dispersed locations. Kaiser Permanente will use the Octel systems to support telephone

answering, automated attendant and voice bulletin board applications.

The HMO will take delivery of six Octel voice processing systems this month, with the remaining 11 to be delivered by late July 1991. Kaiser Permanente expects to have the entire network on-line by the end of next year.

"A regional voice mail network will allow Kaiser Permanente employees to send, answer, forward and distribute detailed messages to one another 24 hours a day, seven days a week from any [push-button] phone in the world," said Penny Todd, regional director of telecommunications for the firm's Southern California region.

"That means staff members whose work keeps them away from a desk or who

work in different locations can more efficiently exchange the information they need to make [key] decisions," Todd said.

Out with the old

The Octel voice processing systems will replace Rolm Co. PhoneMail voice-messaging systems and were chosen over Centigram Corp. systems because of their user-friendly features, superior networking capabilities, high reliability and the ability to integrate with multiple PBXs, Todd said.

Kaiser Permanente has purchased one four- to eight-port Aspen Branch system, four four- to 16-port Branch XPs, five 16- to 72-port Aspen Maxums and seven eight- to 24-port Aspen systems, according to an Octel spokesman. □

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NWWT

Porsche implements ANI, CallPath/400

continued from page 11

tomers data to initiate a second data base lookup. IBM installed the CallPath/400 software on the AS/400, while Northern Telecom installed the latest switch software and its Meridian Link software on Porsche's SL-1 PBX.

"The project went smoothly," Backe recalled. "It was well coordinated between IBM and Northern [Telecom]."

Porsche uses the help desk application primarily to track "incident reporting," instances when its dealers report network problems. The dealers are equipped with IBM Personal Computers XT's — and in some cases, Personal System/2s — running internally developed software. The dealers use Sprint Data Group's X.25 network to upload weekly parts orders, car orders, warranty claims and other requests to an IBM AS/400 here using the software.

Porsche's original help desk application required either of the two people operating the help desk to ask dealers calling in on a single 800 number for their dealer code number, which was then keyed in to the system to call up the dealer's profile.

After receiving the call, the help desk technician often discussed the dealer's problem and took notes while awaiting delivery of the customer profile. Once it arrived, Backe said the notes were keyed in to the system, sometimes incorrectly.

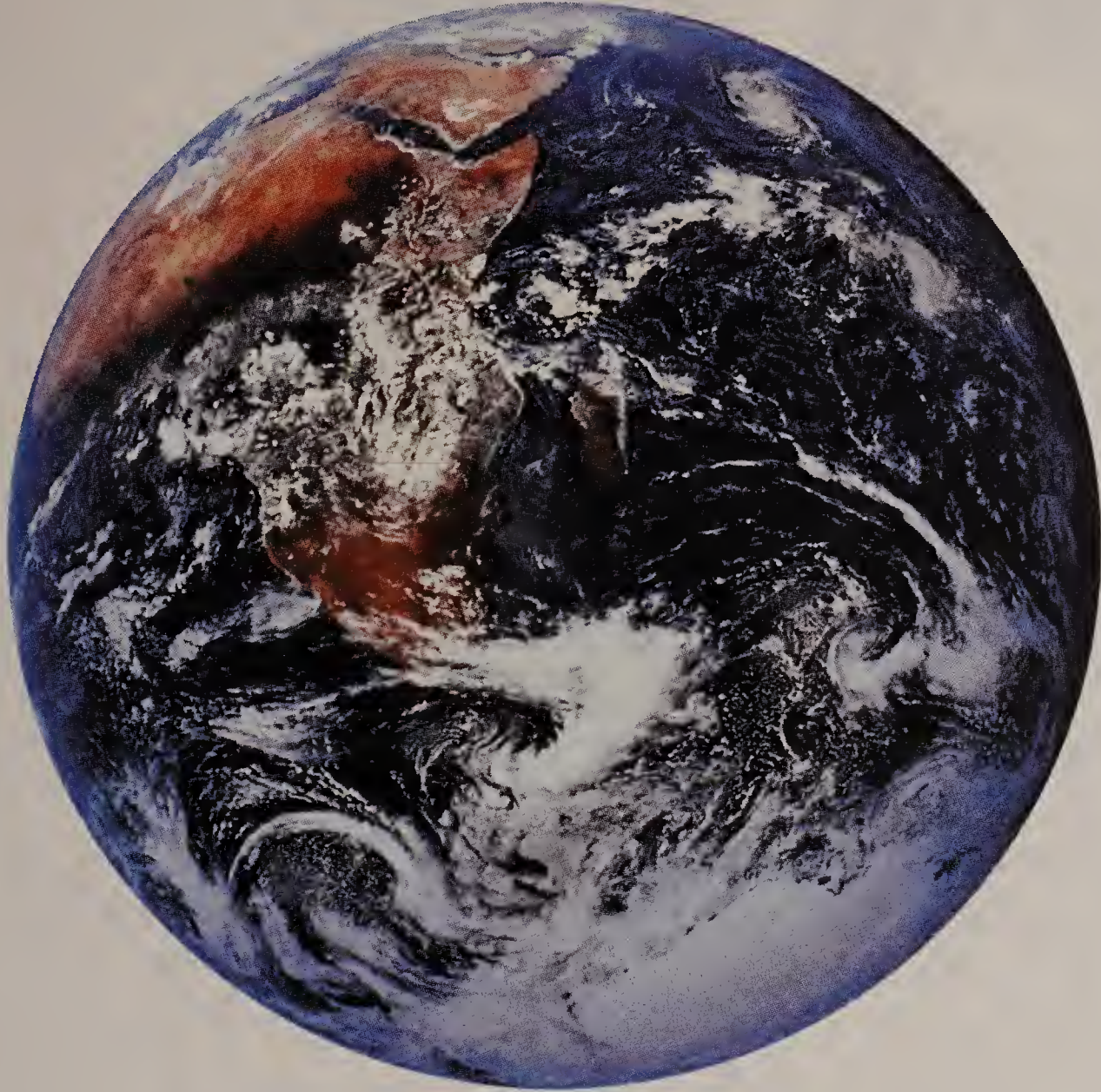
"We've wiped out this problem by using ANI to get the customer profile to the technician as the call arrives," Backe said. Technicians can then spend more time providing technical support to 60 employees on the firm's IBM Token-Ring local-area network.

In addition to using ANI, Porsche is using call-by-call service selection to make more efficient use of the firm's two PRI links by reducing the number of service-specific access links it requires. With call-by-call, the company can use the PRI links to support multiple switched services, including Megacom and Megacom 800.

Porsche's use of call-by-call with its two ISDN PRI links has enabled the company to reduce from 12 to two the number of 64K bit/sec channels needed on the second link. "We couldn't get down to the level where we could eliminate our second T-1, but we freed up bandwidth that can be used for traffic growth and new applications," Backe explained.

Porsche, one of a handful of AT&T customers that uses call-by-call, accesses Megacom and Megacom 800 using the standard feature. Previously, it had to assign channels on its T-1 links to services. □

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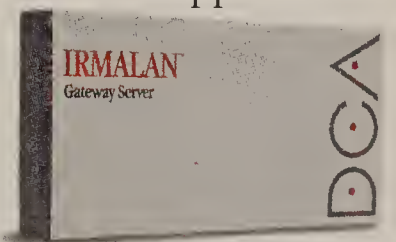
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Two financial companies sign on with MCI for voice, data services

A.G. Edwards, First USA migrating from AT&T service to Vnet.

By Bob Wallace
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp. last week made public contracts worth a total of \$32 million that it won recently from A.G. Edwards & Sons, Inc. and First USA, Inc.

MCI replaces AT&T as the two users' primary long-distance carrier and is supplying both Midwestern financial services companies with a mix of voice and data

network services.

A.G. Edwards and First USA are migrating the bulk of their switched voice traffic from AT&T service to MCI's Vnet virtual network service.

Under its five-year, \$27 million contract with A.G. Edwards, MCI is building the firm a Vnet linking 427 branch sites in 48 states to its U.S. headquarters in St. Louis.

The company is also using MCI's 800 and calling card services.

Under its two-year, \$5 million contract with First USA, MCI is providing an international Vnet linking an undisclosed number of sites to the company's Wilmington, Del., headquarters.

First USA is also using MCI's 800, facsimile and dial-up data services, according to an MCI spokeswoman.

MCI's recent success

MCI has met with a good deal of success in the financial services market in recent months.

Last month, MCI announced it had signed service contracts worth a total of \$30.75 million with Connecticut Mutual Life Insurance Co. and National Westminster Bancorp, Inc., as well as New York Life Insurance Co. ■

FCC explains rate-of-return decision

continued from page 11

tal investments in the net require a rate of return between 10.85% and 11.4%. Consumer groups told the FCC a fair rate of return would be 10.4%.

The FCC then evaluated a number of factors such as evidence of bypass and historical performance of the carriers, in addition to market factors such as inflation and performance of other regulated and nonregulated industries. In the end, the FCC said it was swayed by arguments that carriers must have enough capital to keep investing in the network. Thus, it chose a number at the highest end of the rate-of-return range.

"Our concern about the possibility of a lag in the deployment of advanced technologies counsels that we should exercise our judgment to select a rate of return in the upper part of the range," the FCC stated in its order.

User groups attacked the assertion that carriers are now having or would have problems in the future getting the necessary capital to invest in the network. They claim that since divestiture, the local carriers have been so cash-rich that they have not had to borrow money from outside sources for major capital purchases.

The FCC conceded this point in its order, stating that there is no evidence that the local carriers are currently experiencing any problems getting capital to invest in the network. However, the FCC failed to find this argument persuasive enough to grant users' requests for a lower rate of return. ■

Washington Update

continued from page 11

In the lawsuits, AT&T and MCI allege that telemarketers sometimes called the local companies and switched customers without their knowledge or consent.

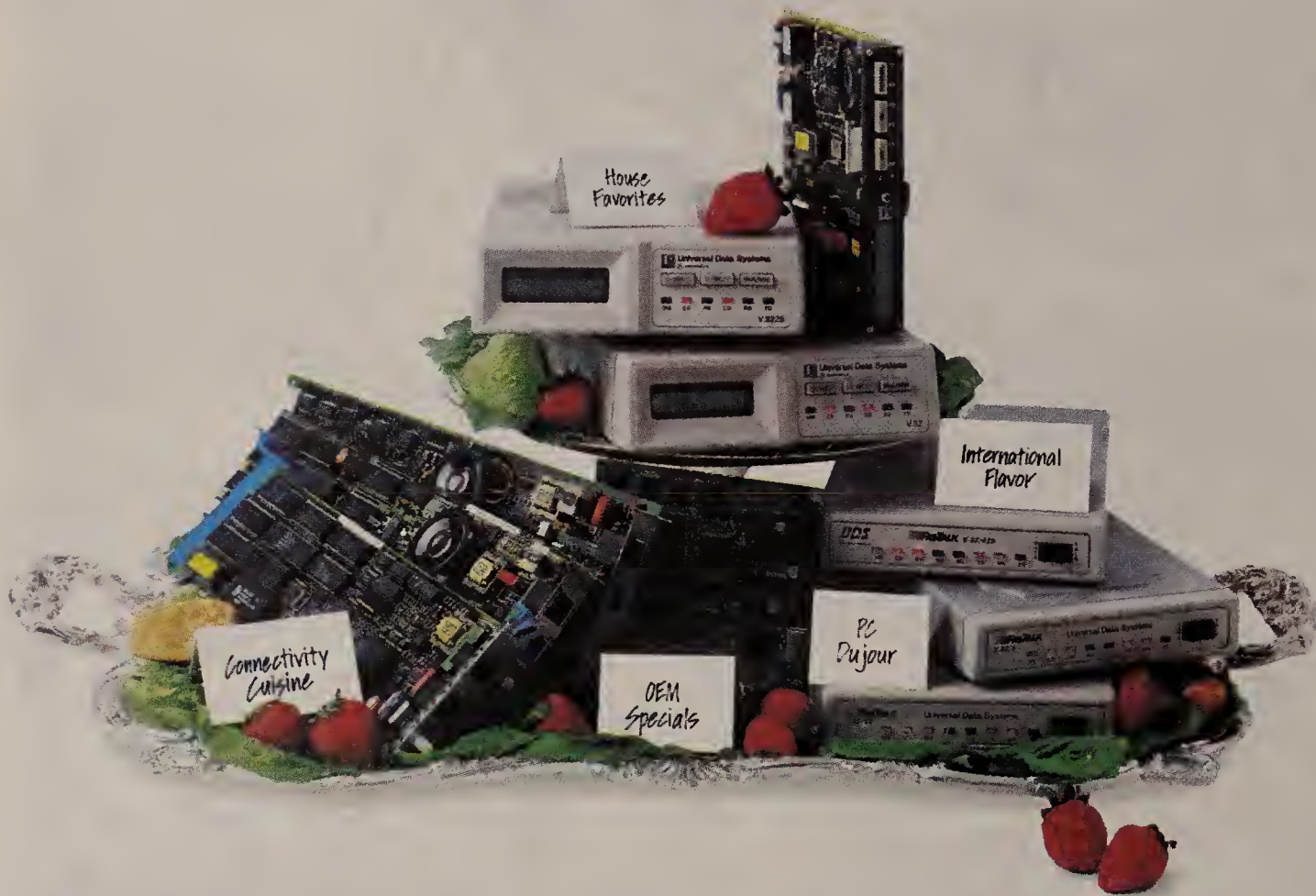
GATT abandons talks. Trade talks that would have reformed pricing practices for private lines in foreign countries and would have included for the first time telephone services in trade negotiations fell apart earlier this month. Officials at a meeting of the General Agreement on Trade and Tariffs (GATT), a 97-nation organization that sets international trade rules, finally gave up talks after it became clear no consensus was possible.

The failure of the talks may be both good and bad news for users. The bad news is that users will miss out on new provisions that would have helped limit the price of private lines abroad. But the good news, according to some observers, is that the U.S. will not be tied to an agreement that could hurt the communications industry. Some said they were worried that the GATT talks would result in opening this country to competition for basic telephone services without securing the same opportunities in foreign markets.

It is unclear whether there is any chance that the trade talks could resume. If they were to begin again, they would have to move quickly because U.S. trade officials face a deadline of March 31 for submitting the GATT agreement to Congress for approval.

It is possible that members of GATT will choose to pursue bilateral trade agreements with one another, instead of returning to the unilateral trade talks. ■

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See The FAXNet Form on Page 24

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

Expenditures on computer network security products are expected to increase from \$209.8 million in 1986 to more than \$1 billion in 1996, with the most growth coming from government administration and nonfinancial commercial sectors, according to "Computer Network Security," a report by Market Intelligence Research Corp. of Mountain View, Calif.

Data Packets

Network Equipment Technologies, Inc. (NET) last week introduced its SPX/420 LAN/WAN gateway that combines the functions of a local-area network terminal server and a statistical multiplexer in one unit.

NET jointly developed the product with **Datability, Inc.** The two firms developed a wide-area network interface board that transforms Datability's Vista VCP-1000 terminal server into an SPX/420.

The new board resides in one of the Vista VCP-1000's five board slots and supports NET's SPX Compatible Communications Architecture.

The SPX/420 receives traffic from terminals directly attached to a remote SPX multiplexer or SPX/420 and passes it via Ethernet to local hosts using Digital Equipment Corp.'s Local Area Transport or the Telnet virtual terminal protocol.

NET also said last week it will sell Datability's Vista VCP-1000 terminal server supporting a maximum of 128 concurrent terminal sessions as the SPX/410 terminal server.

Scheduled for availability in the first quarter of 1991, SPX/420 is priced starting at \$5,700, and SPX/410 is priced starting at \$3,500. ■

The high price of network management development

Net management balance sheet (in millions of dollars)			
Type of vendor	R&D costs	Sales revenue	Total deficit
Computer	\$210	\$95	(\$115)
Modem	137	96	(41)
Switch	131	31	(100)
Telephone	72	18	(54)
Wiring hub	14	9	(5)
Bridge and router	5	4.7	(0.3)

Figures for telephone companies do not include products developed for internal use.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: FORRESTER RESEARCH, INC. CAMBRIDGE, MASS.

Codex 3380 modem gets management capabilities

High-speed modem can be managed via Codex 9800 or 9300 products, or through IBM's NetView.

By Paul Desmond
Senior Editor

MANSFIELD, Mass. — Codex Corp. last week announced enhancements that add net management capabilities, including support under IBM's NetView, to its Model 3380 19.2K bit/sec modem.

Users can perform functions from NetView beyond what IBM supports, Hayes said.

▲▲▲

Priced at \$2,995, the 3380 was introduced in January as a low-cost, high-speed, leased-line modem ("Codex unveils half-price modem at 19.2K bit/sec," *NW*, Jan. 15). Now, for \$3,995, users can buy a 3380 version that can be managed from Codex's high-end 9800 Series Network Management System (NMS) or its personal computer-based 9300 Series NMS.

For \$4,190, users can buy the modem outfitted with net management support, plus Codex's DualView option, which lets IBM's NetView host-based software manage the modems.

With DualView, the same net management capabilities NetView supports for IBM modems are supported for Codex modems, said Tom Hayes, director of transmission product marketing at Codex.

Those capabilities include the ability to remotely reconfigure

the modem, initiate or terminate restoral, obtain circuit quality information and run tests such as loop-backs to determine if the modem is functioning properly.

In addition, users can perform functions from NetView beyond what IBM supports for its own modems, Hayes said. Some of those relate to new 3380 features also announced last week.

Modem sharing

For example, NetView users can configure the 3380's new modem-sharing unit capability. That feature lets as many as eight users share the same 19.2K bit/sec circuit. One user at a time can get access to the full bandwidth.

Also, the 3380's internal multiplexing capability has been enhanced to support eight channels, up from the previous six. Each channel can range in speed from 1,200 to 19.2K bit/sec, Hayes said.

The 3380's internal multiplexing capability has been enhanced to support eight channels.

▲▲▲

Codex has added a 9.6K bit/sec fallback rate to the 3380, Hayes said, to complement the 16.8K, 14.4K and 12K bit/sec fallback rates already supported. Government users often require the 9.6K bit/sec rate, he added.

The network-managed 3380 modem is available now. ■

Newbridge muxes to support frame relay

Firm plans frame relay interface that will enable T-1 muxes to act as hybrid circuit/packet switches.

By Jim Brown
Senior Editor

HERNDON, Va. — Newbridge Networks, Inc. is expected to announce soon a frame relay interface that will enable its line of T-1 multiplexers to act as hybrid circuit and packet switches.

Newbridge has also produced a prototype that will enable its T-1 multiplexers to support Synchronous Optical Network (SONET) standards and work within fiber-optic networks supporting speeds of up to 150M bit/sec.

The company recently demonstrated an early version of its frame relay interface at the Telecommunications Managers Association show last month in Brighton, England, and could announce the product as early as next month at the Communication Network '91 (ComNet) show

in Washington, D.C.

Company officials said they plan announcements at ComNet but declined to confirm that frame relay support will be among them.

The frame relay interface demonstrated in Brighton was a board residing in a Newbridge 3600 series T-1 multiplexer. The interface provided a link between two local-area networks at up to T-1 speeds.

That interface was based on Newbridge's interpretation of the emerging international frame relay standard, said James Michaels, assistant vice-president of network planning. The firm will now retrofit the interface to comply with an interpretation of the frame relay standard defined by StrataCom, Inc., Digital Equip-
(continued on page 56)

Seven-Eleven uses ISDN to link 4,200 stores in Japan

By Jim Brown
Senior Editor

TOKYO — Seven-Eleven Japan Company, Ltd. last week announced it is building a \$17 million network that will link 4,200 convenience stores in Japan to a data center here via Nippon Telegraph and Telephone Corp.'s ISDN-based Integrated Network Service-Net 64 (INS-Net 64) offering.

The firm is installing nine Stratus Computer, Inc. XA 2000 Continuous Processing Systems that will use Integrated Services Digital Network to route traffic between the stores and a Hitachi, Ltd. mainframe here. The XA 2000s will shuttle traffic between the mainframe and 300 suppliers.

The new setup will let the Stratus processors off-load communications tasks from the mainframe, preserving CPU power for critical application processing. It will also provide remote sites with faster links than previously supported. The company will install four XA 2000s here as primary processors and three in a backup center in Yokohama, Japan. Two additional XA 2000s in Yokohama will be used for application development.

Terminal controllers that support cash registers, microcom-

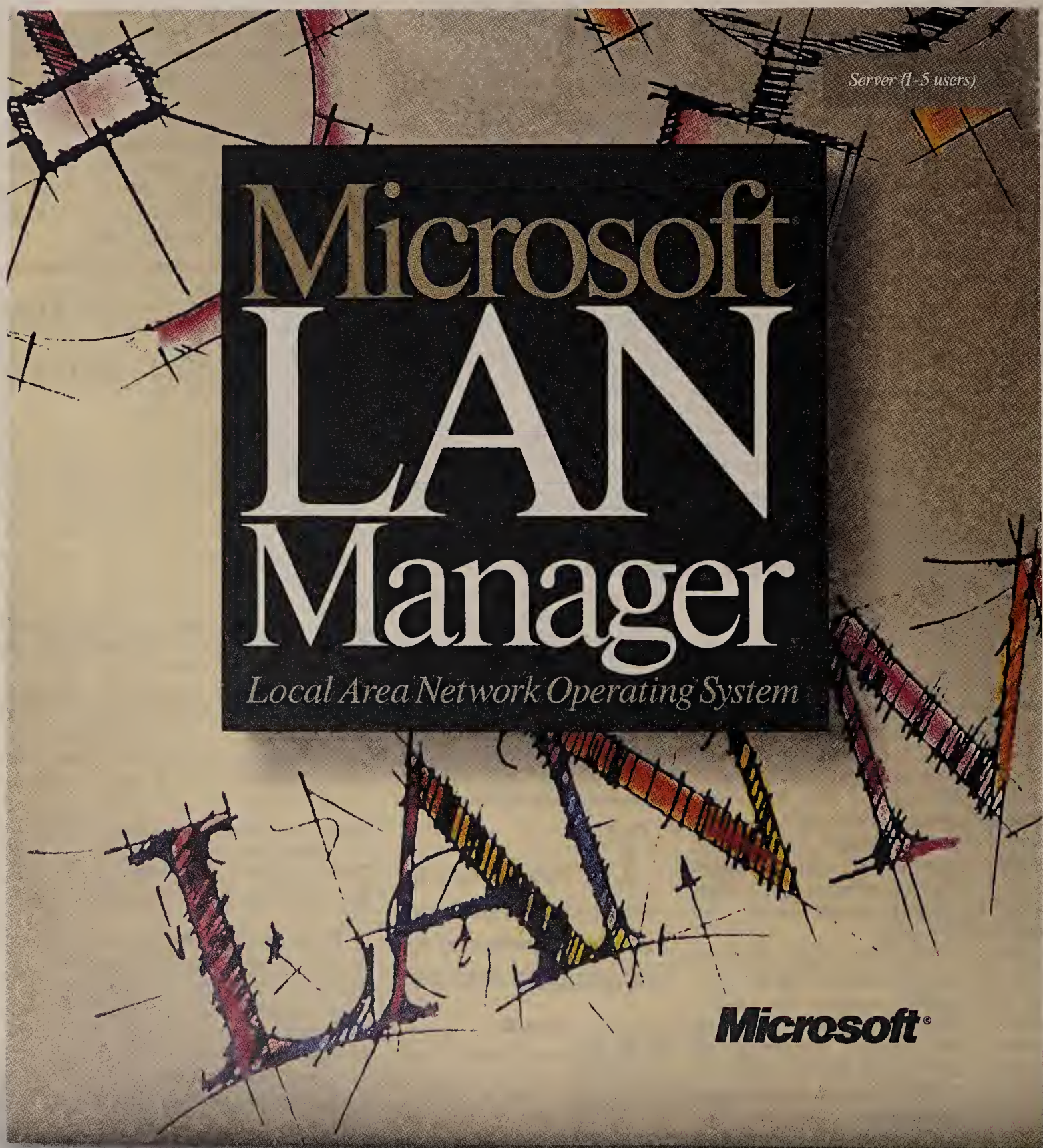
puters and electronic scanners in each store will ship sales data and orders to a Stratus XA 2000 at specified intervals each day via an ISDN Basic Rate Interface circuit supporting throughput of 32K bit/sec. The Stratus processors will pass information over an Ethernet to the mainframe, which will compile sales reports, process incoming orders and generate master purchase orders.

Today, sales data for certain items is shipped at 1,200 bit/sec to a mainframe. The remaining sales data is loaded at the store onto a floppy disk that is mailed to the data center.

Under the new network, the mainframe will download pricing changes to the Stratus XA 2000, which will distribute the changes to stores. The mainframe will also pass master purchase orders to the Stratus, which will ship them via a public electronic data interchange network, called Zen-gin, at up to 4.8K bit/sec to the target supplier. Products are then shipped to warehouses, which distribute the goods to the appropriate store.

Seven-Eleven will also use INS-Net 64 to support 4.8K bit/sec X.25 links that enable it to download images of special promotional products to stores for display on in-store terminals. ■

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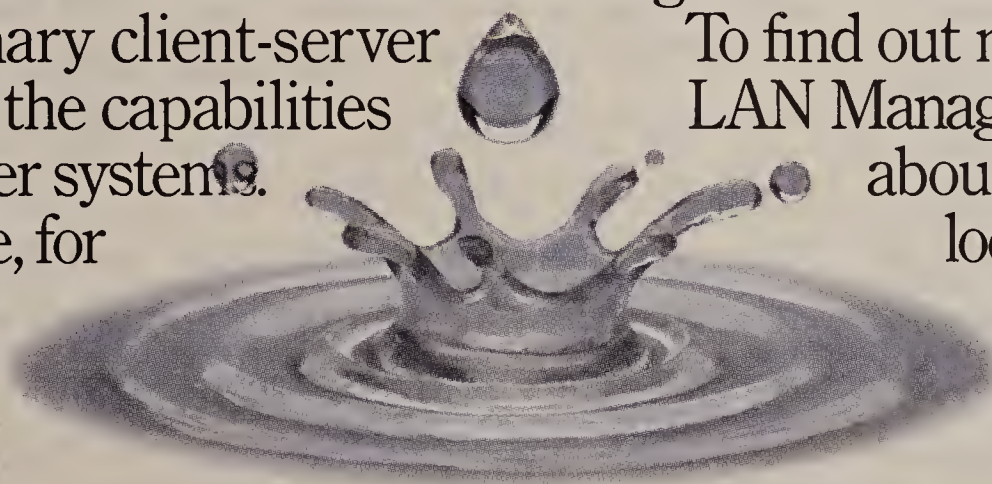
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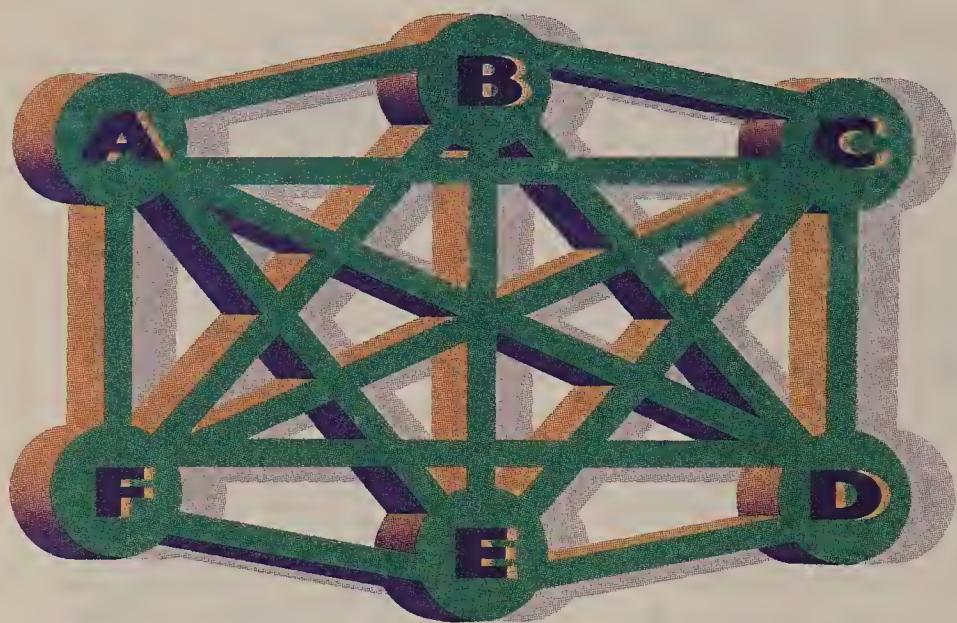


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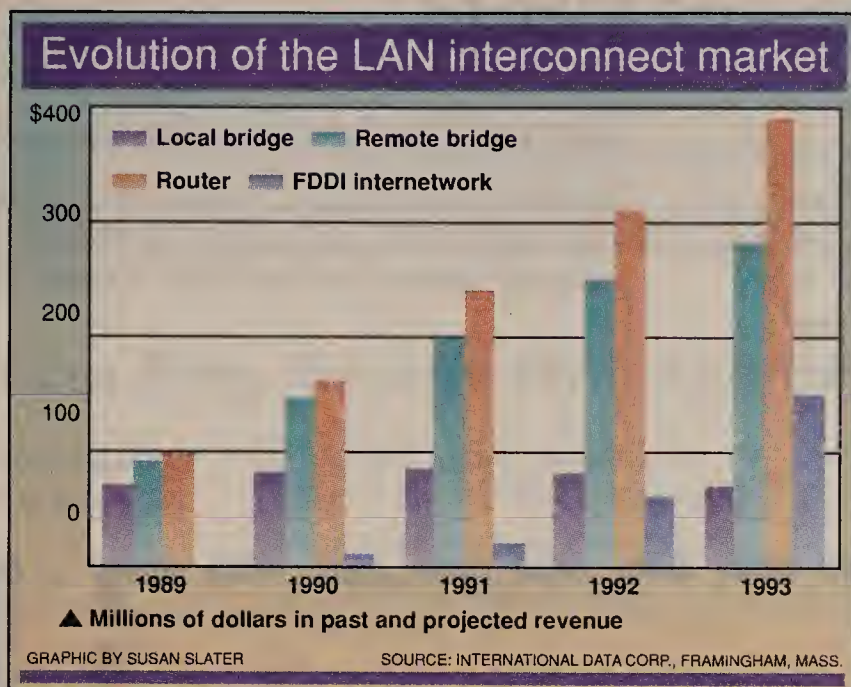
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Worth Noting

“Most people don’t know they have a problem until they have one. People should get their network management tools in place before they have a problem, but that’s not how people work.”

Michael Howard
President
Infonetics Research Institute
San Jose, Calif.



Northern Telecom to pull plug on proprietary LAN

Meridian LANStar eclipsed by Ethernet, token ring.

By Tom Smith
Senior Writer

RICHARDSON, Texas — Northern Telecom, Inc.’s Meridian Business Systems Group recently said it will stop marketing its proprietary Meridian LANStar local-area networking products due to lack of user acceptance.

Meridian LANStar, first introduced in 1985, is a 2.5M bit/sec LAN that runs over unshielded twisted-pair cabling. It supports industry-standard network operating systems but uses a proprietary access method and proprietary interface boards.

Widespread adoption of the Ethernet and token-ring LAN standards hindered acceptance of the LANStar technology, according to a company spokesman who said there are fewer than 100 users of LANStar.

One of the product’s key weaknesses was lack of industry-standard software and device driver support, said Mark Beauchemin, network analyst at MIT Lincoln Laboratory in Lexington, Mass., and president of the LANStar Users Group. Lincoln Laboratory has a 200-node LANStar net running applications including electronic mail, word processing and spreadsheets.

“Northern doesn’t support TCP/IP directly over LANStar,” Beauchemin said, although the product is highly reliable and easy to manage.

Northern Telecom provided a LANStar hub with a 40M bit/sec bus, as well as LANStar interface boards for IBM Personal Computers and Apple Computer, Inc. Macintoshes. Desktop devices were linked to the hub via unshielded twisted-pair cabling in a star topology. The products were marketed through distributors.

Northern Telecom said it has curtailed all development work on LANStar and will cease selling LANStar products on Feb. 15, 1991.

Continued support

The vendor will continue to support the hardware for 10 years while also providing support for the existing versions of Banyan Systems, Inc.’s VINES, Novell, Inc.’s NetWare and Apple’s AppleTalk, Beauchemin said.

But as a customer, Beauchemin said he is concerned about migration paths and the fact that Northern Telecom has not announced specific plans to support them.

“The big thing they need to provide us with is a migration period so we don’t have to convert to some other topology overnight,” he said. “They have no announced plans to support any future versions as of right now, but that’s something we’re trying to negotiate with them.”

Beauchemin said Lincoln Laboratory is in a better position than many other LANStar users because it has already begun a migration to Ethernet.

Northern Telecom would not disclose how much money was generated through LANStar sales but described them as “a very small portion of revenue.”

Staff dedicated to the LANStar product line numbered 45 in the U.S. and Canada. The company said it is trying to place as many of those employees as possible in other positions within Northern Telecom.

The spokesman could not say, however, if there would be layoffs and, if so, how many there were likely to be. ■

RISC-based HP minis act as LAN servers

New mid-range HP 3000 and HP 9000 models function as servers in Ethernet local networks.

By Tom Smith
Senior Writer

PALO ALTO, Calif. — Hewlett-Packard Co. recently expanded its HP 3000 and HP 9000 mini-computer lines with the introduction of five mid-range Reduced Instruction Set Computer (RISC)-based models positioned as LAN servers.

The company also unveiled a number of new communications software packages, including a program that enables HP 9000s to communicate with IBM processors over Systems Network Architecture links using IBM’s LU 6.2 peer-to-peer communications protocol.

All five of the new HP 3000 and HP 9000 models can function as servers for client/server applications running across Ethernet local-area networks. According to Doug Gibson, a product line manager at HP, the machines will be appropriate for mission-critical

cal applications including on-line transaction processing and data bases.

The HP 3000 and HP 9000 models can run HP’s LAN Manager/X network operating system and support DOS, OS/2, Apple Computer, Inc.’s Macintosh and Unix clients.

The HP 9000 family already supports HP-UX, the company’s implementation of Unix, and networking protocols such as Transmission Control Protocol/Internet Protocol and Sun Microsystems, Inc.’s Network File System. The HP 3000 product line runs HP’s proprietary HP-MPE/XL operating system.

The new models in the HP 3000 line are the Series 948 and 958. The Series 948 can be configured with 64M to 256M bytes of main memory and up to 34.8G bytes of disk storage. It supports a maximum of 400 workstations.

(continued on page 25)

AT&T server ties LANs to X.25, SDLC wide-area links

MORRISTOWN, N.J. — AT&T Network Systems Group recently announced it will market Eicon Technology Corp.’s wide-area network gateways, which will enable local-area network users to access X.25 and SDLC facilities through AT&T Datalink II Virtual Circuit Switches (VCS).

The LAN Communications Server (LCS) will convert data from Network Basic I/O System protocols or Novell, Inc.’s NetWare Internetwork Packet Exchange (IPX) LAN protocol to run over X.25 or IBM Synchronous Data Link Control lines.

Strategy

AT&T will market LCS for use with its Datalink II VCS, which will provide the connection between the gateway and the wide-area network.

The LCS consists of an AT&T Model 6386 personal computer configured with a standard token-ring or Starlan interface, an EiconCard intelligent coprocessor and Eicon Access Gateway software.

Eicon has previously sold the products, but they were not offered for use with a specific WAN product.

The LCS can reside on any NETBIOS- or IPX-based LAN regardless of topology or access method, converting the LAN data into X.25 or SDLC formats.

The personal computer LCS, which is dedicated to performing gateway functions, provides the physical connection to the Datalink II VCS, which then connects to the wide-area network.

The Eicon gateway board costs \$1,595. X.25 software supporting 254 user sessions is priced at \$2,750, and SDLC software supporting the same number of sessions costs \$2,050.

With either protocol, users select whether they want a software version supporting IBM 3270 or 5250 terminals for communications with a host computer.

The product is available now.

In the future, AT&T will enhance the LCS by making it possible to use a proprietary host communications protocol between the gateway and the Datalink II VCS and to support speeds up to 128K bit/sec. With SDLC and X.25, by contrast, the maximum speed is 64K bit/sec.

For more information, contact AT&T at (201) 580-4913 or (201) 580-5516. ■

Netnotes

Shiva Corp. last week announced it has acquired the EtherPort line of Macintosh-to-Ethernet interface boards from Novell, Inc. The agreement gives Shiva exclusive rights to the EtherPort trademark.

Effective Jan. 4, Shiva will assume full responsibility for future development and technical support of EtherPort’s installed base of nearly 100,000 units.

EtherPort cards are currently available for the Apple Computer, Inc. Macintosh SE and SE30, as well as the Macintosh II family of microcomputers. Shiva plans to extend the line by offering EtherPort cards for the Macintosh LC and the new IIsi in early 1991.

The company also plans to enable EtherPort to support other types of wiring schemes. The product currently supports thick and thin Ethernet and SynOptics Communications, Inc.’s LattisNet twisted-pair wiring. Support for the 10BaseT twisted-pair wiring specification will also be added in early 1991.

Network Resources Corp. recently introduced an Ethernet interface for Apple Computer, Inc. Macintosh computers that costs \$295. The Mac1000, a 32-bit Ethernet card for Macintosh II microcomputers, supports thick or thin coaxial cable and 10BaseT twisted-pair wire links. The interface reportedly fully implements 10BaseT.

(continued on page 25)

FAXNeT is a service designed to help readers of *Network World* gather important information via FAX on products and services advertised in *Network World*.

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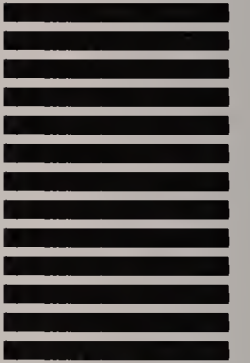
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RISC-based minis act as LAN servers

continued from page 23

The Series 958 comes with 96M to 56M bytes of main memory and a maximum of 38.4G bytes of hard disk storage. It can support as many as 600 users.

Prices for the Series 948 and 958 are \$120,000 and \$245,000, respectively. Both are expected to be available by year end.

The new HP 9000s are the Models 842S, 852S and 865S.

The 842S and 852S can be configured with 256M to 45.5G bytes of disk storage and can support as many as 400 users. The only difference between the two machines is that the 842S comes standard with 32M bytes of memory, while the 852S comes standard with 64M bytes of memory.

The Models 842S and 852S, which should be available before year end, will cost \$85,000 and \$143,000, respectively.

The Model 865S supports 64M to 512M bytes of main memory, as much as 85.8G bytes of disk capacity and as many as 600 users. It is expected to be available by the second quarter of 1991 for \$275,000.

Netnotes

continued from page 23

The move to 10BaseT networks is expected to be easy for Macintosh users that already have AppleTalk networks based on some form of twisted-pair wire.

The Mac1000 is available now.

The company can be reached at 2450 Autumnvale Drive, San Jose, Calif. 95131, or call (408) 263-8100.

IDEAssociates, Inc. recently unveiled an emulation board and software that lets DOS-based microcomputers simultaneously emulate an IBM 3270 and Digital Equipment Corp. VT-320 terminal.

The Billerica, Mass., company said its IDEAcomm 3270/Advanced Function Terminal (AFT) board resides in microcomputers and provides a port that links the microcomputer to an IBM 3174 or compatible cluster controller via twisted-pair or coaxial cable. Users must employ the microcomputer's communications port to establish a direct connection to a DEC VAX or attach the microcomputer to one of the firm's 3174-compatible IDEA Concert Controllers, which are capable of accessing IBM mainframes and DEC VAXes.

IDEAcomm 3270/AFT software running on the microcomputer supports as many as five concurrent 3270 terminal-emulation sessions and a single VT-320 session. An IDEAssociates windowing capability built into the software enables users to simultaneously display all six of the terminal-emulation sessions, as well as a single DOS session and two notepads on the microcomputer screen. Notepads let users post data on the screen as opposed to entering it directly in an application.

The IDEAcomm 3270/AFT software also supports file transfer between the microcomputer and the IBM host or DEC VAX. It includes IBM's High Level Language Application Program Interface, which enables users to develop microcomputer applications that transparently establish 3270 emulation sessions when host data is needed.

Available now, the IDEAcomm 3270/AFT board costs \$550, while the 3270 emulation software is priced at \$445, and the VT-320 software costs \$150. ■

Last week's announcements also included the introduction of HP-UX LU 6.2, LU 6.2 software for the HP 9000 product family that enables those minicomputers

to \$14,000.

Also introduced was HP SwitchOver/UX, software that runs on two HP 9000 systems and enables one system to contin-

The 842S and 852S can be configured with 256M to 45.5G bytes of disk storage and can support as many as 400 users.

▲▲▲

to establish sessions with IBM mainframes over an SNA network.

The software, which will be available by year end, will range in price from \$7,000

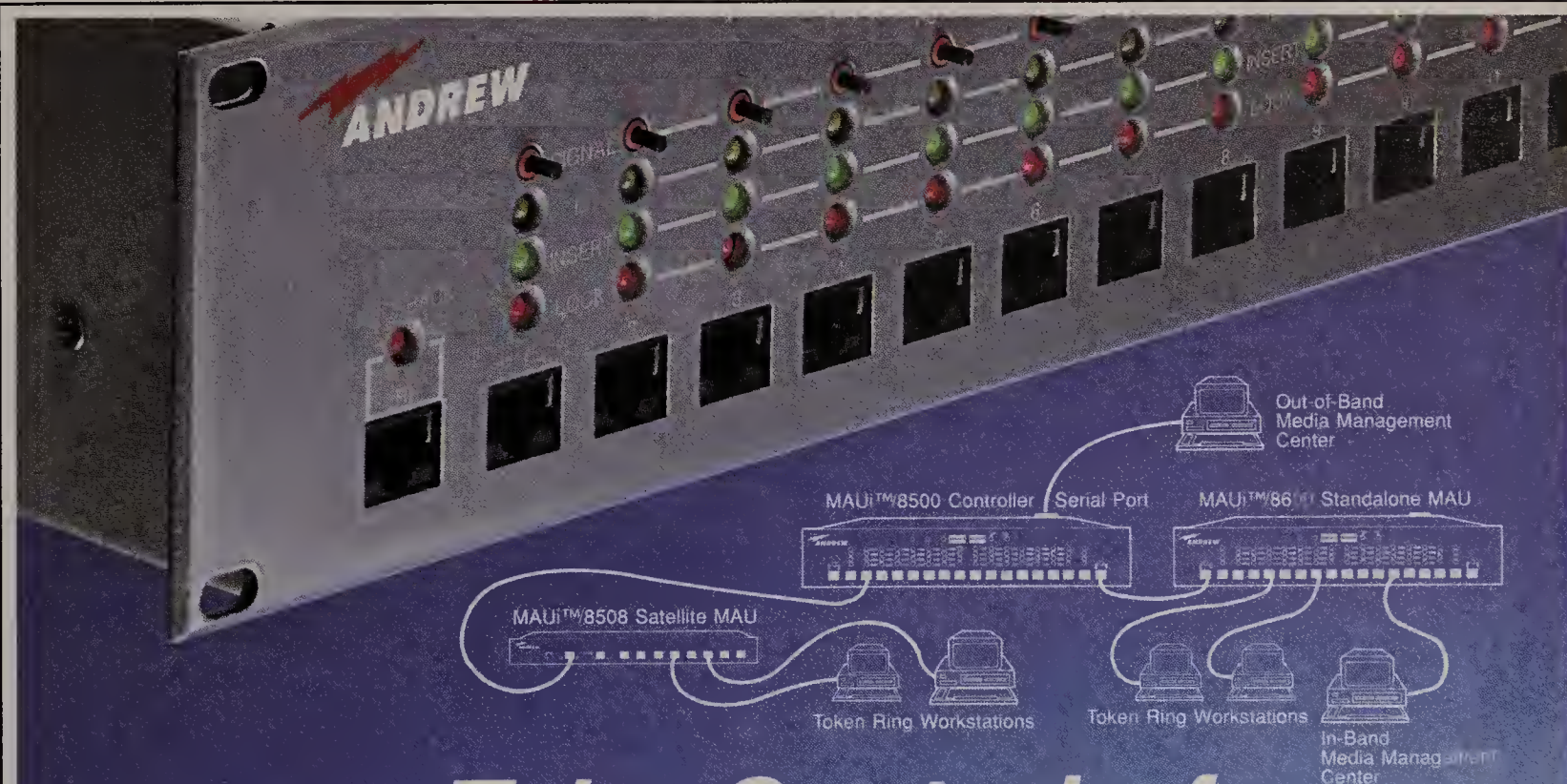
to \$14,000. Also introduced was HP SwitchOver/UX, software that runs on two HP 9000 systems and enables one system to contin-

HP SwitchOver/UX, which is expected to be available by year end, will cost up to \$32,000.

Finally, HP unveiled NewWave Access, a client/server application that allows users of its NewWave graphical user interface to submit SQL queries to data bases from HP and third-party vendors, including Ashton-Tate Corp., IBM, Oracle Corp. and others. Those data bases can reside on microcomputers, minicomputers and mainframes.

The object-oriented graphical user interface provided with the DOS-based NewWave 3.0 allows users to build data base queries that are translated by the software into SQL format.

NewWave Access is scheduled for availability in the first quarter of 1991 for \$295 per user. ■



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See The FAXNeT Form on Page 24

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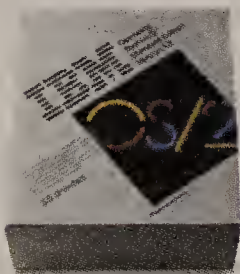
microcomputers.

Many industry observers still see OS/2, with its inherent multitasking functionality, as the **eventual PC standard**. For instance, this is an appeal

Computer Systems News, May 28, 1990

“Eventually” is here.

ANNOUNCING THE OS/2 YOU'VE BEEN WAITING FOR.



For quite some time, the press has been writing about the move everyone will want to make to OS/2.®

Eventually.

Well, all at once OS/2 1.3 has made OS/2 the operating system it was meant to be—the one you'll want to move to right here and now.

OS/2 LOSES A LITTLE WEIGHT.

For starters, OS/2 has lost some of its appetite for memory. In fact, now you can make the move to OS/2 1.3 with as little as two megabytes on

tivity. The ability to run applications larger than 640K. DOS compatibility. All these features have made OS/2 appealing in the past, but new features have catapulted OS/2 into the here and now.

For instance, now OS/2 1.3 harnesses the power of Adobe Type Manager™ (ATM™).

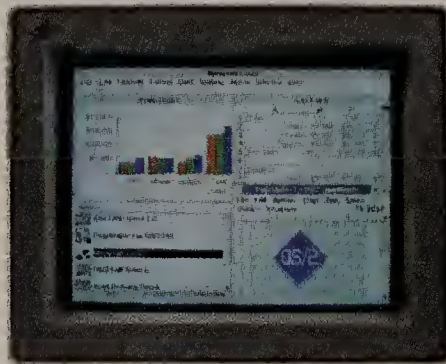
den in design... complex applications... **OS/2 will become a more attractive option for the future as users learn to take better advantage of its multitasking, enhanced de-**

PC Week, August 13, 1990

With this new feature, the quality of screen fonts has improved dramatically, giving you a true WYSIWYG capability so what you see is indeed what you get. ATM

also gives OS/2 more flexibility in document creation by supporting a wide range of outline fonts.

Of course, what good is all this without printer support? Not much. So OS/2 1.3 has improved and expanded its printer support to include drivers for almost all popular printers.



BUSINESS IS BOOMING.

Now that OS/2 is moving forward, so are software developers. Every day, more and more applications are joining the growing pool of available OS/2 software. In fact, a variety of major business programs, including Aldus® PageMaker®, Lotus® 1-2-3/G® and Microsoft® Excel, have already made the transition to OS/2.

These, along with many others, have been redesigned to go beyond DOS memory limits and take advantage of OS/2's intuitive graphical interface—Presentation Manager.™

It's been said that eventually

give up a thing to do it. **Eventually, we need OS/2** all the power and safety the operating system brings.

Will Fastie, The Fastie Report, May 31, 1990

you'll want to take advantage of everything OS/2 has to offer. Well, wait no more because “eventually” is here.

For more information on what OS/2 can do for you here and now, or to get details on a no-charge upgrade to Version 1.3, contact your IBM

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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Dialogue

Employees of the Nashville Electric Service (NES), a public utility in Tennessee, recently filed a lawsuit to block the company from outsourcing its information systems (IS) operations. Is this type of employee response to outsourcing the beginning of a trend or an isolated incident?

"I believe it is an isolated incident. However, it appears NES handled the situation in a secretive manner, which may have fostered greater employee resentment than if it was discussed publicly early on.

"The management of most companies today tries to elicit employee input before making major decisions, although this is not possible in every case. In NES' case, the effect of the decision seems to have caused an adverse reaction among all NES employees, not just those being transferred.

"This dramatizes the need for companies to be more open with employees."

Jeff Hafer

Telecommunications manager
General Public Utilities
Service Corp.
Reading, Pa.

"I think it's an isolated incident. If the employees were successful in preventing the outsourcing, then it might make others faced with a similar situation try the same tactic. But I'll be very surprised if they do succeed.

"Besides, a public utility typically doesn't use information systems to strategic advantage the way those in highly competitive industries such as retailing do.

"So the IS department at a highly regulated company would be more prone to an outsourcing threat than IS departments in the retail industry, where IS is viewed as an important part of the firm's business strategy."

Michael Prince

Data processing manager
Burlington Coat
Factory Warehouse
Lebanon, N.H.

Network World invites users to respond to future "Dialogue" questions through our Bulletin Board System (BBS). For information on how to access the BBS, see the Table of Contents on page 2.

College net draws students for unique degree program

Offers students work experience, 24-hour access.

By Maureen Molloy
Staff Writer

CATONSVILLE, Md. — Noted as the only school in Maryland to offer a degree in data communications, Catonsville Community College counts on its director of computer services to create a network information systems (IS) environment conducive to attracting technically oriented students.

To this end, Wallace Knapp has migrated the school's network over the past nine years from a local batch environment to one that is completely on-line.

"Our aim was to build a modern network that would bring computing power to each desktop on campus and enable users to go to any terminal and get immedi-

ate information," said Knapp, who designed the network.

"We wanted to mirror as best we could the level and quality of computing that our students will find in the outside business world," he said.

Today, the network links 14 buildings on the main Catonsville campus and eight off-campus teaching centers, as well as one neighboring county branch campus. It also supports on-line computer services for another community college and four vocational high schools.

In total, it links more than 750 terminals and personal computers in 30 buildings, all connected to a central data center here.

The data center houses an IBM 4381 Model R14 Processor that supports administrative and academic functions. A data base management system on the machine supports student data systems and integrates registration, grade reporting and advising information for the school's 30,000 students. It also supports financial systems such as budget, payroll and accounts payable information.

The center has a Digital Equipment Corp. VAX 11/780 and an
(continued on page 28)



Wallace Knapp

GUIDELINES

BY ERIC SCHMALL

Minimizing the downside of network surprises

Any manager will readily identify with Yogi Berra's observation: "I don't mind surprises as long as I know about them in advance." Surprises are the scourge of effective management. Top management views surprises as manifestations of inadequate planning, failed forecasts, improper controls, communication breakdowns, poor organization, incompetent coordination or failure to command.

An unexpected turn of events can generate nagging questions about whether the manager could have been better prepared to see the event coming. Even surprises with a positive outcome, such as ending the fiscal year with extra money in the budget, can lead to suspicions that the manager isn't a good planner.

Much of a network manager's life is focused on minimizing technology surprises. We pay princely sums for equipment that automatically monitors the health and performance of voice and data networks and their associated equipment.

But despite our best efforts, it is often impossible to accurately forecast network usage, performance and capacity requirements. Statistical models can't take into account unexpected shocks such as an oil crisis or economic downturns that ruin our forecasts.

Network managers are also vulnerable to a variety of other surprises: a key network analyst may abruptly resign, undermining a strategic project in midstream; a voice mail vendor could
(continued on page 28)

Eastman Kodak's outsourcing time line

Oct. 2,
1989

Eastman Kodak signs a 5-year contract with Businessland, Inc. to provide PC support and training for Eastman Kodak's 35,000 PC users throughout the U.S.

IBM assumes control of Eastman Kodak's data center operations and agrees to consolidate 4 existing data centers into a single, new facility. The multiyear, multimillion-dollar deal involves the transfer of 300 Eastman Kodak employees to IBM.

Feb. 23,
1990

Eastman Kodak signs DEC to manage its wide-area voice and non-IBM data nets, and signs IBM to manage its worldwide SNA networks. The 2 deals involve the transfer of about 275 Eastman Kodak employees to DEC and IBM.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: EASTMAN KODAK CO. ROCHESTER, N.Y.

Kodak exec relates outsourcing lessons

Outsourcing pioneer Kathy Hudson discusses pros/cons of contracting out network functions.

Q&A A year ago, Eastman Kodak Co. sent shock waves through the ranks of network and information systems (IS) managers when it decided to hand over the management of its network, mainframe and personal computer support operations to third-party vendors Digital Equipment Corp., IBM and Businessland, Inc., respectively.

Since then, many large companies have followed Eastman Kodak's example and signed multiyear, multimillion-dollar contracts with a growing cadre of outsourcing vendors. In addition, a host of other firms have at least explored the feasibility of outsourcing some or all of their IS and network operations.

Network World Senior Editor Wayne Eckerson spoke recently with Kathy Hudson, vice-president and director of corporate IS and one of the main architects of Eastman Kodak's outsourcing agreements, to see how well the program is working.

How would you rate the success of your outsourcing effort?

At this point, I would rate it a 6 in a scale from 1 to 10. But the good news is that we have a shot at a 12. The future looks good, but it's a long-term process that takes a couple of years to get in stride and a lot of hard work.

Have you completed the transition to outsourcing?

The full transition takes about two years, and we're about halfway there. It takes about that long for people to break many of their old habits, such as getting friends in the data center to do special jobs for them. Now there's a fixed procedure in place and

you have to do everything by the rules. That's caused people some frustration, and they have complained a little. It takes a while to get used to it.

A year ago, you said your greatest concern about outsourcing was losing control of operations. Was this a legitimate fear?

No, for two reasons. We thought we were in control before [we outsourced], but we were in control of the wrong stuff. We controlled whether we should install a T-1 line, not whether we were using technol-

"The process we put in place to manage our [vendor] partners is working very well."

▲▲▲

ogy to help the company fulfill its business objectives.

Second, the process we put in place to manage our [vendor] partners is working very well. We have a relationship management team assigned to each of our vendor partners. These teams consist of six to eight Kodak people who are essentially internal account managers. They work with big Kodak IS customers to resolve problems they may have with one of our partners and ensure that everything is going smoothly.

In addition, we have a board of directors for each vendor that meets quarterly. The boards con-
(continued on page 28)

College net draws students

continued from page 27

IBM Application System/400 Model 30, both of which are used exclusively to support student computing.

Synchronous access to the data center mainframe is provided through an IBM 3745 front-end processor, while most of the asynchronous traffic from remote terminals and personal computers comes in through an Infotron Systems Corp. INX4600 data switch. The network also offers asynchronous dial-up support for students who want to access the center from home.

Although most of the remote buildings are linked to the data center via multiplexed leased lines that support a mix of synchronous and asynchronous traffic, the school has installed two remote Infotron data switch modules.

The on-campus module is linked via fiber cable, while a re-

mote off-campus node is linked via a T-1 line. The T-1 line will eventually support voice communications between these sites.

Students can access the center 24 hours a day. "Students don't ever have to wait in line to use the school's limited number of computer terminals," Knapp said. "They can do their assignments at home at 3 a.m. if they have to."

Virtually all computer users have access to an electronic mail system, enabling information to be exchanged between students, faculty and administrators.

The college also subscribes to Bitnet, an international store-and-forward network that acts like an electronic bulletin board linking Catonsville students with about 1,600 other colleges worldwide. The vocational/technical schools tied into the data center by leased lines have on-line terminals for interactive programming.

"We saved some \$300,000 by connecting with the Catonsville network instead of building sepa-



Catonsville Community College in Maryland

rate computer systems," said Paul Plevyak, coordinator for the Baltimore County Public Schools' office of business education. "We're sharing not only hardware and software costs, but all of the annual maintenance costs."

Knapp said the college will gradually implement local-area networks in each of the college's buildings to enable local sharing

of software and departmental data.

The college has already installed token-ring LANs running Novell, Inc. software at five campus buildings, one in an administrative office and the other four in student teaching labs. Two other buildings, a student graphics lab and the school's printing shop, have Apple Computer, Inc. Ap-

pleTalk LANs.

Besides Knapp and two other professionals, the network is managed by advanced data communications students at Catonsville and other local colleges. Knapp said the practice of hiring student interns allows the college to give talented students more hands-on experience in overseeing a communications network and further cuts down on payroll costs.

Catonsville offers majors in computer science, IS, data communications and MIS. The Telecommunications Association, Inc. (TCA) of Maryland, a chapter of the national TCA, helped develop the current curriculum.

"We'll continue evolving with the industry and keep our students up to speed on the latest technology," Knapp said. "Our aim is to have the college heralded by data communications professionals as a valuable training resource, and the network has been a substantial plus in helping us achieve that." ■

Kodak exec tells of outsourcing

continued from page 27

sist of four or five vendor representatives and four or five Kodak people. The boards assess the vendors' past performance and discuss Kodak's future strategic needs. We also have a cross-alliance group, which consists of Kodak and vendor managers from each of the three alliances who get together regularly to discuss common issues among all three groups.

Is there anything you would do differently if you had to do it over again?

Yes. We would refine the process by which we selected a partner. We ran into problems by repeatedly changing the [Kodak] people who were talking with prospective partners before we signed a final agreement.

Also, we would increase communications with Kodak end users. When you have 35,000 end users on the PC side, it can be a big problem. You have to have almost constant communication with them because they frequently forget what you have told them. It's a difficult problem that we're still working on.

How has outsourcing changed your job?

It has allowed me to focus on how we should be using technology instead of what technology to use. Outsourcing frees you from the day-to-day operational problems so you can spend more time focusing on strategic business issues. I no longer spend two or three weeks a year in planning and justifying capital expenditures. I have all this free time to spend thinking about how Kodak's core businesses can benefit from technology.

Also, by getting rid of the glasshouse, the business folks look at us differently. Instead of being viewed as techies who can't really be trusted, they see us more as strategic thinkers and planners.

Do you have any tangible evidence that outsourcing has helped Kodak's bottom line and has helped it focus more on its core businesses?

The best evidence I have is that I don't bother the chairman of the board to the tune of 20 hours a week trying to justify capital expenditures. He, as well as

"Outsourcing frees you from the day-to-day problems so you can focus on strategy."

▲▲▲

other managers, are gaining more time [to focus on strategic business issues].

Another fringe benefit is that we have freed up two to three purchasing agents and human resources people to work in other areas. We didn't count these savings in the economics of the original deal.

How about IS costs?

We've seen dramatic reductions. Our capital costs have dropped 95%. Our overall costs to provide personal computer support have dropped 5% to 10%, and the costs to support mainframe operations have declined 10% to 15%. In addition, we have received even larger savings in telecommunications because

we're now able to leverage our purchasing power with Digital's to achieve significant discounts.

What has been the impact on Kodak employees who were transferred as part of the outsourcing agreements?

Most would say it has been a positive move for them.

When we told employees in February 1988 that we were considering outsourcing, it understandably caused a great deal of anxiety, which didn't abate until after the time the deals were signed. We worked hard to address employees' concerns, and we renegotiated certain items with our trading partners that we had not considered, such as whether the vendors would reimburse employees for job-related course work.

After all was said and done, many employees came to us and said, "You told us to trust you, and we didn't. But you were right; we are all better off. I like my new job."

How many of those employees are still working for your partners, and how many have been transferred?

Only a half-dozen [out of about 600] have left [our partners' organizations], and we are beginning to see some transfers, maybe a half-dozen. Overall, it's been pretty stable and morale within the troops remains high, especially on the IBM side. A recent IBM employee survey showed that the group handling the Kodak account was one of the best within all of IBM.

What is the key to managing an outsource vendor?

Trust. The most important thing to do is establish an environment of trust and openness. Any problem can be solved if you

don't take a position right away. All parties must recognize that it's a long-term relationship, like a marriage, that takes commitment and a willingness to work out problems in order to succeed. We may argue, but the mutual trust and commitment allows us to resolve our differences.

Have vendors lived up to service-level agreements?

In many cases, we put in [service-level agreements] that were stretches [for our partners]. We wanted an improvement, not just the status quo. In the computing environment, for example, we're pushing for 100% uptime. We aren't totally there yet, but we are all moving consistently in the right direction.

Do you have less flexibility to respond to changes in the business environment because you are no longer in control of the technology?

Actually, we're more responsive to business needs because the vendors are experts and can bring a lot more resources to bear on an issue. It's also true that we aren't always using our partners' own equipment. For example, we've requested that IBM implement a lot of non-IBM software in our mainframe environment. The [partners] take a deep breath and say, "OK, you're the customer. We'll do it."

Is Kodak's case different from other companies that have outsourced operations?

We put it in a different context. Most people look at outsourcing as a sign of weakness, stupidity or both. We based our decision on a strategic rationale, which was to focus on Kodak's core businesses. We are not a telephone company, a mainframe computer company or a PC supply shop. ■

Minimizing net surprises

continued from page 27

suddenly file for bankruptcy; network maintenance rates may unexpectedly increase 35%; and a merger or acquisition could put all projects on hold until the two firms' networks are merged.

There are several actions net managers can take to minimize the negative impact of surprises. First, network managers have to rid themselves of the notion that they can squelch the unexpected through diligent use of voice and data network management tools. These glorified bit counters watch only a few degrees of the horizon that net managers are entrusted to watch.

Besides technical forecasts, net administrators need to detect subtle shifts of mood and attitude in their staff, users and senior managers. They also need to be sensitive to changes in their organization's mission, marketplace, performance and partnerships. They keep a vigilant watch over their ability to compete and what their vendors are developing.

Net managers also have to be proficient at interpreting what they see. They have to discriminate accurately among the myriad events and determine what patterns might be evolving. They need to constantly imagine what surprises might arise to disrupt their operation.

Finally, managers need to constantly review ideas with their bosses, staff and peers. Managers should use these people as sounding boards and work with them to assess the risk of any potential surprise. This process prepares managers for a broader range of surprises, fosters participation by a greater number of people and keeps everyone alert for sudden change. ■

INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

World News

Overseas Telecommunications, Inc. (OTI), an Alexandria, Va.-based international carrier, last week said it won a contract to install the world's first international digital circuit between France and Mexico.

The 128K bit/sec link will be used by the French carmaker **Regie Nationale Des Usines Renault** to carry voice, facsimile and batch data files between its headquarters in France and a manufacturing facility in Mexico.

Traffic will flow from France to an OTI gateway satellite earth station in Dallas via the Trans-Atlantic Telecommunications-8 submarine fiber-optic cable and land-based fiber facilities in the U.S. operated by OTI.

Traffic will then bounce off Mexico's Morelos satellite to a very small aperture terminal earth station on Renault's premises in Durango, Mexico. Renault is leasing the VSAT dish from OTI.

OTI said this is the first international digital circuit routed through the U.S. that does not terminate in the U.S. MCI Communications Corp. is now in the process of acquiring OTI, but that deal has not been completed.

AT&T last week said it won a \$132.6 million contract to install 57% of a new submarine fiber-optic cable scheduled to be cut over in 1993 that will link Hawaii and New Zealand.

The AT&T ship, C.S. Long Lines, will install 4,385 kilometers of the 7,000-km Pacific fiber cable. **■**

Planning proves critical to averting int'l net headaches

Budgets, personnel issues are the top concerns.

Last of two parts.

Cory Van Wolvelaere
Special to Network World

With a little up-front planning, network managers can reduce the stress of a global net project by minimizing the impact of post, telegraph and telephone administrations, budgeting for exorbitant costs and sorting out the myriad of personnel issues they are bound to encounter.

ANALYSIS

First, net managers shouldn't plan on running an international network project on a shoestring budget. International nets are expensive — generally two to five times more expensive than building a comparable U.S. net. They also consume about 50% to 100% more time to design and implement. Project managers should budget for costly lines at the onset of a project, instead of facing sticker shock later.

In addition, not all of these expenses can be attributed to hard costs, such as line and equipment expenditures.

For example, team members should plan to visit each remote site in the network at least three times.

The first visit should be used to disseminate information and generate buy-in from the network user. The second visit, two to three months before the installation, should be used to survey the site and prepare for the installation. The third visit should be during the installation and conversion.

Van Wolvelaere is a partner in the telecommunications practice of Andersen Consulting in Chicago.

Effective communication at all levels is key to a successful international networking project.

The first step in establishing the prerequisite communication is to have an international team staffed by personnel familiar with the environment in which you are building your net. Indigenous personnel will often have a much easier time dealing with the PTTs and foreign vendors, and may have more leverage than someone from the U.S.

Having native personnel on your team is often a necessity. Contracts may be in multiple languages. Situations can also arise in which only natives of a country are allowed to sign contracts.

In fact, it is a good idea to have the project headed by someone from the area in which you are building the network.

In setting up the project, it is important to have a project steering committee to ensure that the goals of the project and the needs of future network users are met.

Consistency

To ensure effective network communications, network managers must clearly define consistent project standards for terminology, documents and indexes. The standards should be the same for each segment of the project so that a reference to a packet node, for example, means the same thing for each segment.

To facilitate the synergy between different segments of a project, it is helpful to let the project teams overlap. For example, we brought members of our European team to work for a few weeks on the U.S. segment of our project and sent members of the U.S. team to work for a few weeks on the European segment. This

(continued on page 30)

International virtual net pricing — U.K. to U.S.

Rates for calls to on-net locations during busiest calling periods

	British Telecommunications PLC	Mercury Communications, Ltd.
On-net call origination	<p>2 p.m. to 3 p.m. 49 pence (98 cents U.S.)/min</p> <p>3 p.m. to 5 p.m. 54 pence (\$1.08 U.S.)/min</p> <p>5 p.m. to 6 p.m. 49 pence (98 cents U.S.)/min</p>	<p>2 p.m. to 6 p.m. 52 pence (\$1.04 U.S.)/min</p>
Off-net call origination	Not applicable	<p>2 p.m. to 6 p.m. 53 pence (\$1.06 U.S.)/min</p>

Calling periods are in Greenwich time. Currency conversions assume one pound sterling equals \$2 U.S.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: TELECHOICE, INC. MONTCLAIR, N.J.

Int'l virtual network rates due to change

Carriers still feeling out rival pricing structures; current rates offer attractive savings, discounts.

By Daniel Briere
Contributing Editor

Network users with heavy calling volumes between the U.S. and the U.K. may find they can save as much as 20% in monthly international service costs by signing up for virtual network services offered by carriers on both sides of the Atlantic.

While virtual network services have been available in the U.S. for more than five years, carriers are just starting to release tariffs for international connections. As with early long-distance tariffs, however, there are substantial differences among the carriers about how to price these new services.

Carriers are jockeying for pricing position, trying to find out where their rates should fall relative to the competition's. All three U.S. carriers are evaluating their competitors' rates, and another round of rate changes is expected within six weeks.

For example, AT&T last week said it would use current International City Center Service rates for on-net-to-on-net Global Software-Defined Network (SDN) connections to British Telecommunications PLC's International FeatureNet product. MCI Communications Corp. is offering promotional rates that expire at the end of this month.

US Sprint Communications Co., too, is studying its rates to make sure it remains competitive in the changing environment. The carrier will likely file rate revisions in the next four weeks.

Of all three U.S. carriers, US Sprint offers a stand-alone discount table for international calling based on service usage: Discounts range from 4% to 33%, regardless of the U.K. calling period during which calls are placed.

MCI charges a flat rate for all levels of its international Vnet

(continued on page 30)

What it takes to be the international specialist.

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—Peter Moebius,
VP—Europe & Africa
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See The FAXNet Form on Page 24

NETWORK WORLD • DECEMBER 17, 1990

Planning critical to averting headaches

continued from page 29

aids knowledge transfer between segments and helps build consistency.

Also, team members should plan on being the network's first users. As segments of the network go on-line, team members should use it to communicate between sites. This not only facilitates communication between teams based, for example, in Chicago and London, but it also helps to tune the net and identify problems.

Communication with external players — PTTs, vendors and network users — is also crucial to a project's success. Effective communication can help the project identify what options are available in a region,

assist in the negotiation process, reduce lead times and ensure an acceptable level of maintenance and service.

Dealing with PTTs is often a complex and frustrating task. It's helpful to target someone on the team whose primary responsibility is to manage relationships with the PTTs.

Also, net managers should regularly schedule vendor meetings so that the major vendor contacts are schedule-driven, not crisis-driven.

The moral of the story is that building an international network is a complicated process. In addition to the daunting technical task, there are enormous logistical and managerial considerations that must be addressed. Thus, an experienced, international project team is a must. **Z**

Int'l virtual net rates due to change

continued from page 29

virtual network service for on-net-to-on-net and on-net-to-off-net calling to the U.K. It also offers a 20% discount on standard-period calls made to the U.K.

AT&T's discounting structure is extremely complicated and makes it difficult for users to compare its pricing with that of MCI and US Sprint. AT&T's Global SDN users can apply their on-net-to-on-net and on-net-to-off-net usage toward their Usage Reduction Plan and Expanded Volume Plan discount levels. The combination of discounts and commitment levels is endless. In general, however, discounts range up to 35% for on-net originated traffic.

Given that MCI charges flat rates for on-

net-to-on-net calling, MCI is consistently priced at \$2.84 for an average 5-min call. The same 5-min on-net-to-on-net AT&T ICCS on-net-to-on-net call to the U.K. can range from a high of \$3.20 to about \$2.60 under the maximum AT&T term and discounting plans.

US Sprint rates decline with usage as discount schedules take effect, ranging from \$3.94 to below \$2.99 for the same 5-min call. Thus, US Sprint always has the highest on-net-to-on-net rates.

The good news is that average costs per minute for U.S.-to-U.K. calling is lower than ever. Calling during peak periods can get as low as 50 cents per minute for on-net-to-on-net calls using AT&T's Global SDN offering. By comparison, a 5-min call using AT&T's standard direct-dial rate to the U.K. would average \$1.04 per minute.

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B. Your Business or Profession (Circle One)

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3. Wholesaling/Distribution
4. Insurance/Banking/Financial
5. Professional/Service
6. Education
7. Health Care
8. Government
9. Communication Carriers
10. Voice Communications Equipment
11. Computer Equipment
12. Datacom Equipment
13. Information Service

C. Your Job Title/Function (Circle One)

1. General Management
2. Marketing/Sales
3. Production/Operations
4. Telecom Management (Voice/Data)
5. Voice Communications Management Only
14. Consultant
15. Software
16. Other (Specify) _____

D. Size of Your Organization (Circle One)

1. Under 100
2. 100-499
3. 500-999
4. 1,000-4,999
5. Over 5,000

E. What is your role in the purchasing process of communications equipment and services? (Circle One)

1. Final Decision Maker
2. Recommend
3. Specify
4. No role
10. General Management
11. Marketing/Sales
12. Hardware Manufacturing & Development
13. Software Development
14. Engineering
15. Consultant
16. Other (Specify) _____

No one under 18 admitted. This form may be duplicated.

Return Registration Form with \$15 payment before December 21, to:
Communication Networks, P.O. Box 9107, Framingham, MA 01701-9107.

International virtual net pricing — U.S. to U.K.

Rates for 5-minute, on-net-to-on-net calls

	US Sprint ¹	MCI ²	AT&T
\$500 and up	\$2.99		\$2.62 ³
400	3.03		
350	3.07		
300	3.11	\$2.84	
250	3.14		
200	3.18		
150	3.22		
125	3.25		2.93 ⁴
100	3.29		
75	3.33		
50	3.37		
40	3.40		
30	3.44		
25	3.48		
20	3.52		3.20 ⁵
15	3.59		
10	3.67		
0	3.97		

▲ Usage in thousands of dollars

1. Prices assume use of Option II Virtual Private Network and 2-year contract.
2. Promotional rates effective through Dec. 31, 1990.
3. Average price of call assuming \$500,000/month billing, and 4-year EVP and URP discounts.
4. Average price of call assuming \$50,000/month billing with EVP and URP discounts.
5. Average price of call assuming no discount.

EVP = Extended Value Plan
URP = Usage Reduction Plan

SOURCE: TELECHOICE, INC. MONTCLAIR, N.J.
GRAPHIC BY SUSAN J. CHAMPENY

For on-net-to-off-net calling, the differences are likewise dramatic. US Sprint does not differentiate between its on-net and off-net termination rates, whereas AT&T and MCI do. A sample 5-min call using AT&T's on-net-to-off-net product, World Connect, would cost about \$3.59. MCI's comparable rate would be \$3.79, while US Sprint's cascading rate drops as low as \$2.99 (see graphic, this page).

Pricing in the U.K. is less complicated, largely because of the inability of carriers to discount rates for regulatory reasons. The focus of U.S. and U.K. businesses is on a four-hour window between 9 a.m. and 1 p.m. Eastern Standard Time in the U.S., or 2 p.m. and 6 p.m. Greenwich time (see graphic, page 29). This is generally the time when offices are open both in the U.K. and the U.S.

On average, British Telecom's International FeatureNet per-minute rates to the U.S. during this period are slightly lower than Mercury Global Virtual Private Network (VPN) rates, 51.5 pence (or about 97.9 cents) vs. 52 pence (or about 99

(continued on page 56)

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

SNA Link lets PC function as IBM SNA router

Netlink, Inc. last week announced **SNA Link**, software that makes a personal computer function as an IBM Systems Network Architecture router.

SNA Link enables a user to simplify backbone networks and reduce costs by supporting seven downstream Synchronous Data Link Control sessions on a single 64K bit/sec full-duplex line.

Systems Network Architecture hosts recognize SNA Link as a PU Type 2 cluster controller. Netlink said the software can eliminate multidrop lines.

SNA Link's Communications Network Management interface provides a link to IBM's NetView so devices attached to an SNA Link host can be monitored and controlled via NetView.

SNA Link costs \$1,500; it is scheduled to ship next month.

Netlink, Inc., 3214 Spring Forest Road, Raleigh, N.C. 27604; (919) 878-8612.

Voicelink software offers more control for call lists

Digital Systems International, Inc. recently announced Version 5.3 of its Voicelink call processing software that offers users greater flexibility in controlling call lists. It comes with enhanced call-reporting features.

Digital Systems built new list management tools into the software that give Voicelink system operators the ability to evaluate a call list and determine whom to call and how the call should be placed.

The software can place calls at predetermined times and set the order of phone numbers to call.

Voicelink Version 5.3 also comes with a Unit Work List and Quota feature that enables a manager in a telemarketing department to assign parts of a calling list and specific calling goals to one operator or a group of operators.

The company declined to release pricing information on the upgrade.

Digital Systems International, Inc., Redmond Science Park, 7659 178th Place N.E., Redmond, Wash. 98052; (206) 881-7544.

Combinet intros ISDN LAN Adapter

LOS GATOS, Calif. — Combinet, Inc. recently announced an Integrated Services Digital Network adapter that can be used to bridge local-area networks over wide areas or to support equipment with V.24 or V.35 interfaces.

The Interchange ISDN LAN Adapter supports an ISDN Basic Rate Interface (BRI) for wide-area communications and can be configured with as many as two Ethernet or token-ring LAN interfaces, or two V.24 and V.35 interfaces.

Ethernet and token-ring interfaces can be used in the same box, but they cannot be mixed and matched with the V.24 and V.35 interfaces.

The Interchange provides concurrent support for two 64K bit/sec circuit-switched channels, with the B channels defined by the 2B+D BRI. The product is compatible with ISDN services provided from AT&T 5ESS central office switches.

When used to bridge LANs over ISDN facilities, the Interchange provides a data-link layer connection and is transparent to upper layer LAN protocols.

The V.24 and V.35 interfaces for the Interchange will enable customers to replace existing synchronous modem links with high-speed dial-up ISDN connections.

The V.24 Line Interface Card will support synchronous connections at speeds up to 38.4K bit/sec. The interface, compati-

ble with the CCITT RS-232 standard at speeds up to 19.2K bit/sec, is transparent to the data terminal equipment (DTE), meaning it can be used without software modification.

The V.35 Line Interface Card supports synchronous links at speeds up to 64K bit/sec and is transparent to the DTE.

The company also offers a Coax Interface Card to connect IBM 3270-type peripherals to IBM cluster controllers via ISDN.

Customers can configure the Interchange by tying an ASCII terminal or personal computer running a configuration program to the configuration port of the box. The user-friendly configura-

The product is compatible with ISDN services provided from AT&T 5ESS CO switches.

▲▲▲

tion process poses questions such as what number is to be dialed and, if it involves use of the V.24 or V.35 interfaces, what speed the interfaces should support.

The Interchange is priced at \$1,395. The Ethernet and token-ring interfaces cost \$495 each, while the V.24 and V.35 cards are priced at \$445, and the Coax Interface costs \$395. The Ethernet and token-ring interfaces are expected to be available March 1; the other equipment is available now.

Combinet can be reached by writing to 111 Andre Court, Los Gatos, Calif. 95032, or by calling (408) 358-4826.

Racal-Vadic bolsters control of its dial-up modem line

CMS 910 system offers multitasking features.

MILPITAS, Calif. — Racal-Vadic last week unveiled its CMS 910 Dial Management System, software that provides network administrators with monitoring and control of the company's dial-up modems.

Unlike Racal-Vadic's Multiple Data Set (MDS) II/VA9000 network management system, which was a single-tasking product used by a sole operator, the CMS 910 Dial Management System can handle several network monitoring and control tasks simultaneously from more than one operator.

The CMS 910 system runs on a

personal computer supporting Unix; the net management station is tied to local modems housed in a VA1690 chassis or to remote modems over dial-up lines.

"The importance to customers is the ability to support multiple modems and multiple users concurrently," said Scott Porter, director of marketing at Racal-Vadic. Customers, he said, wanted the ability to remotely access the management system or have several net administrators manage separate blocks of modems on a local or regional basis.

(continued on page 56)

Unisys supports NFS on CTOS computers

New software will let CTOS workstations exchange files with other systems and run DOS applications.

By Jim Brown
Senior Editor

SAN JOSE, Calif. — Unisys Corp. recently announced software that will enable its workstations running CTOS to support Sun Microsystems, Inc. Network File System (NFS) and run DOS applications under Microsoft Corp.'s Microsoft Windows 3.0.

Support for NFS will enable CTOS workstations to exchange files with other systems running NFS on the same net, opening the door for CTOS workstations to use larger NFS-based systems for file storage. Available in the first half of 1991, the software costs from \$1,500 to \$3,000.

The ability to run Microsoft Windows 3.0 applications on CTOS workstations is included in Release 4.1 of Unisys' PC Emulator package. PC Emulator 4.1 is accessed via CTOS clients. The server package costs \$435, and each client package costs \$529.

Unisys also announced Release 2 of its CTOS TCP/IP software that will enable developers to build CTOS applications that use the Socket application program interface (API) included with the Unix BSD operating system. The API will enable CTOS

applications to use the Transmission Control Protocol/Internet Protocol to communicate with similar applications on other vendor's hosts and will be available in the first quarter of 1991 for between \$1,500 and \$3,000.

In addition, Unisys introduced Version 2.0 of its ClusterShare software, client/server software that enables microcomputer clients to access CTOS servers over a Unisys CTOS Cluster Local-Area Network. ClusterShare 2.0 is available immediately for \$435 for the server and \$529 for each client.

Lastly, Unisys introduced two new ClusterCard boards that work with ClusterShare software. The first board is for Micro Channel Architecture-based IBM Personal System/2s and will be available in the first quarter of 1991. Pricing has not been set. The other resides in DOS-based IBM Personal Computer ATs with an Extended Industry Standard Architecture bus. It is available now for \$650.

For more information contact Unisys Corp. in writing at 2700 N. First Street, P.O. Box 6685, San Jose, Calif. 95150, or call (408) 434-2848.

Datability offers line of low-end terminal servers

NEW YORK — Datability Software Systems, Inc. last week launched a series of low-end terminal servers for use in linking terminal users to Digital Equipment Corp. VMS and Unix hosts.

The units offer a lower per-port cost to users than Datability's existing VCP-1000 and come equipped with dual processors to offer higher performance than other low-end terminal servers, according to Ron Howard, Datability's president.

The VCP-200 and VCP-300 are based on dual 16-MHz Intel Corp. 80186 microprocessors with an 82586 companion chip for handling network processing chores. The VCP-200 comes with eight asynchronous ports, and the VCP-300 offers users 16 asynchronous ports. All ports support data rates up to 38.4K bit/sec.

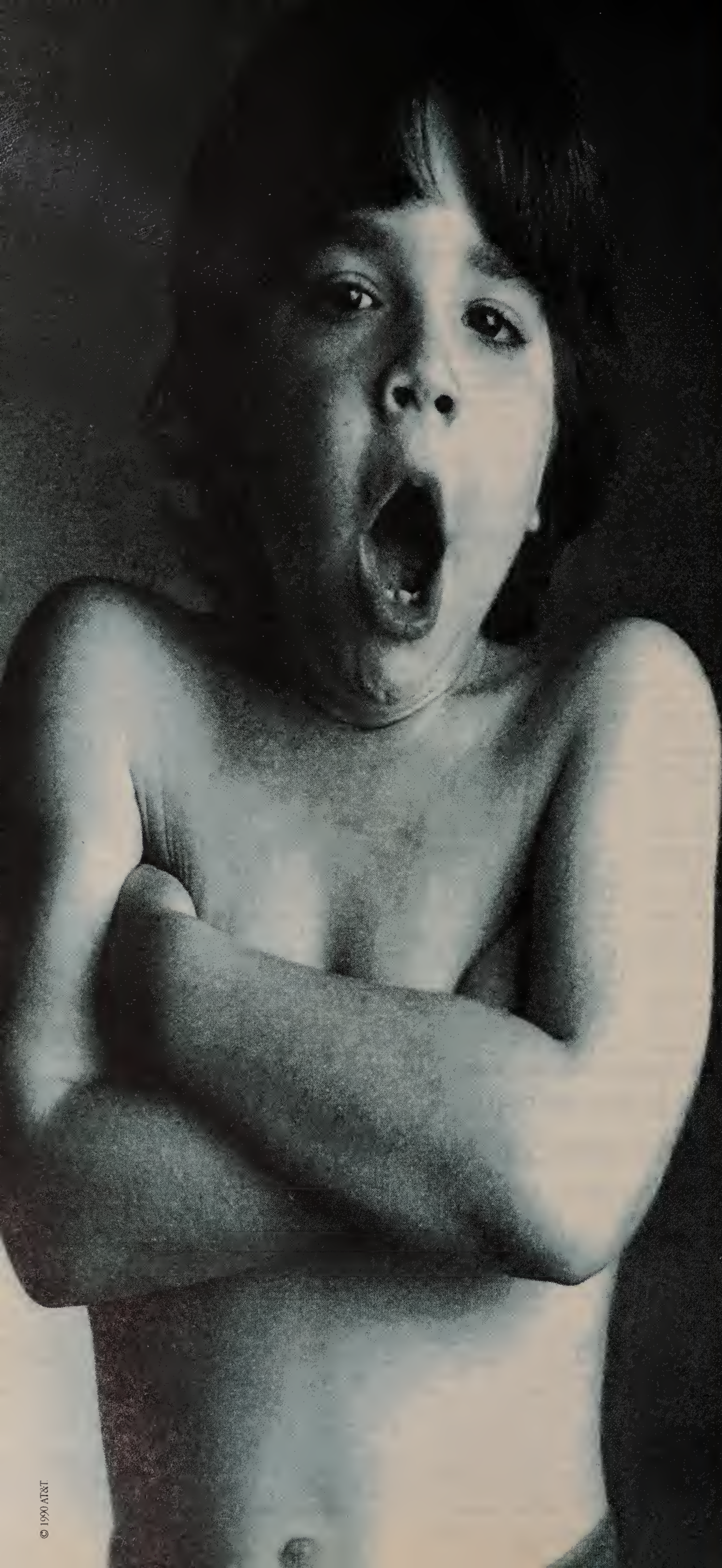
Howard said the dual 80186 chips assure customers that port speeds will not degrade as the ter-

minal server load is increased. By contrast, he said, throughput degrades on other vendors' low-end single-processor servers as more terminal sessions are established.

Both models support a broad array of Transmission Control Protocol/Internet Protocol features such as Telnet terminal emulation, Rlogin, the serial line interface protocol, File Transfer Protocol and the Simple Network Management Protocol.

At a price of \$2,399 and \$2,999, respectively, the eight-port VCP-200 and 16-port VCP-300 offer significantly lower per-port costs than low-end VCP-1000 models that sell for \$3,499. The VCP-1000 supports from eight to 128 users. Both units are available now.

For more information, contact Datability at 322 Eighth Ave, New York, N.Y., 10001, or call (800) 342-5377.



*I'm sitting in a
about my son
above our house
I told him that
hand; however,
some unknown
and my little boy
MAINTENANCE
come up with
actually happen.
switch is devoted
for the tip and he
fly right, Dad,
for me going to*

corner office on a round planet and I'm thinking
and how last night he looked at the crescent moon
and said, "Daddy, broken moon, broken moon." And
the moon would be fixed soon by a silent and unseen
the PBX that I bought for the corporation from
company might not be fixed any time soon at all,
who is only five said, "Dad, AT&T has a REMOTE
lab in Denver set up to detect any problems that might
their DEFINITY[®] System and fix them before they
You see, Dad, a full 1/3 of the memory of a DEFINITY
entirely to self-maintenance." And I told him thanks
looked up at me and said, "Straighten up and
because no silent and unseen hand is going to pay
college."

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OPINIONS

AUTOMATIC NUMBER IDENTIFICATION

BY JOHN NILES

Let caller ID sink or swim on its own

By trying to forcibly extract identifying information from callers rather than promoting the value of automatic number identification (ANI), the regional Bell holding companies and independent telephone companies have managed to transform caller ID services from a business opportunity into a legal quagmire.

A service that reveals the caller's location is sometimes beneficial to the caller — as in the case of 911 calls — and sometimes not. There are many rational reasons why people may not want to reveal where they are every time they make a phone call.

Examples might be a caller who is only a block away but is calling to say that he doesn't have time to visit the called party in person, a start-up business that is located temporarily in an unprestigious neighborhood or a residential customer who doesn't want to be part of a data base of households expressing interest in a particular service.

Why can't phone companies show respect for their calling customers?

▲▲▲

Respect the customers

The telecommunications industry's emerging strategy for

ANI is to sell the telephone number location of all originating calls without callers' permission, with the exception of those who employ the backhanded option of blocking.

Why can't phone companies show respect for their calling customers? This requires simply offering caller ID as a new service feature worth voluntarily buying at the time a call is made.

Users could decide each time they pick up the phone whether to punch in the tone that would send the identifying information. In this framework, callers would pay for the benefit of choosing to make ANI part of a calling transaction. There are many ways those on the receiving end who want to use the caller ID information can motivate — even compensate — callers for purchasing a measured ANI service.

For example, a pizza delivery service might offer a lower price to customers who send their calling information when phoning in an order because such orders are less likely to be fraudulent. Also, the delivery address can be quickly retrieved from a computer data base, which saves the store time and money.

As another example, many individuals at home may choose to buy a service that blocks incoming calls lacking ANI. If this service became popular, it would spur the use of caller ID by those who want their calls to get through more often.

For those who want their phones to send the caller ID all of the time, fine.

Telephone companies would like that too. It would enable them to offer a special volume discount price. A distinctive dial tone could warn unsuspecting users that a particular phone line *always* sends ANI.

Caller ID should be allowed to sink or swim based on its value as a voluntary purchase of service at both ends of a communications transaction.

There are pricing and marketing challenges in this approach, but the need to consider laws about wire tapping and issues of civil liberty is reduced.

In short, if you want, you buy. And if you don't want to buy, you certainly shouldn't buy. ■

Niles is president of Global Telematics, a management and public policy consulting firm in Seattle.

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EDITORIAL

Insist upon the facts in interoperability testing

Interoperability testing has a laudable goal — the certainty that a product does what it is supposed to do. But claims that products have been subjected to such tests can sometimes mislead potential customers.

There is obvious and specific meaning in a user's own interoperability test, a trial of a service or of hardware or software that might be placed on the user's network. However, vendors' interoperability demonstrations are often mere promotions; sometimes not all features of the products are tested.

Remember that when vendors announce that their products have been subjected to interoperability tests, they often don't cite which other products were used in the test, whether all features of all products were tested or even whether any of the vendors failed the test.

Interoperability testing has been in the news a lot lately. Last week, for example, the now-dor-

mant Open Token Foundation was chided by some of its members for not having started up an interoperability test lab.

This week, four router makers — Advanced Computer Communications, Proteon, Inc., 3Com Corp. and Wellfleet Communications, Inc. — are scheduled to run an open interoperability test of the Open Shortest Path First routing protocol at the University of Maryland at College Park.

The government is big in interoperability testing. The U.S. Air Force reportedly is considering toughening its present interoperability testing of products that work with IBM's Network Basic I/O System after discovering that some offerings that conformed to an earlier test do not necessarily work with IBM's products.

However, the National Institute of Standards and Technology has reported difficulty in starting its testing programs for

the Government Open Systems Interconnection Profile and may not be able to achieve the accuracy it had intended.

In addition, the University of New Hampshire in Durham recently set up an interoperability lab for 10BaseT and Fiber Distributed Data Interface. Later, North Carolina State University in Raleigh set up an interoperability test lab for Integrated Services Digital Networks.

Unfortunately, university laboratories are not helping in users' quest for knowledge about interoperability. The results of many of the tests they conduct are kept secret for the test sponsors — in other words, the vendors.

So making sense of vendors' claims is still up to users. They must continue to be critical, demanding about specifics and as tough on the vague term "tested" as they have learned to be about the equally ambiguous word "supports." ■

OPINIONS

CLIENT/SERVER COMPUTING

BY JOHN MCQUILLAN

The time for networked applications has come

These days, everybody is talking about client/server computing. What that means is unclear, but certainly there are more predictions all the time that mainframes are going the way of the dinosaur. Many companies now expect their mainframes to eventually be used as servers on extended local-area networks — a development with far-reaching implications.

In some cases, network managers will have to work on stimulating demand.

▲▲▲

To support the transactions from intelligent workstations that client/server computing entails, traditional mainframe applications must be reengineered. In the future, when client/server architectures are the norm rather than the exception, transactions will no longer take the form of queries and responses. Instead, they may consist of data base updates or even remote procedure calls.

In the communications industry, rapid change is inevitable. In fact, it has sped up even further with the arrival of personal computers and workstations. Systems with multimegabytes of random-access memory and high-resolution displays are becoming commonplace in the office. It's a crime to use them in the traditional manner, as dumb terminals, when accessing remote computer resources. But technology alone is not going to solve the problem of how to use intelligent workstations most effectively on a network.

A thoughtful telecommunications manager at a large user company recently said to me, "We have technical specialists in our company for networks and we have other specialists for applications, but we don't have anybody who is working on networked applications."

McQuillan is president of McQuillan Consulting in Cambridge, Mass. He assists users and vendors in planning communications systems.

Application developers can no longer plan applications without considering the capabilities of the network on which they will be used. This has been the traditional way of doing things.

In the past, the network manager's role was reactive: Wait for demand to build and then install network capacity to support that demand. In the networked application era, network planners will have to be more proactive. They'll have to increase the supply of network capacity before users demand it.

In fact, in some cases, network managers will have to work on stimulating demand. Likewise, it would be a mistake to allow application developers to continue to build systems that make the same assumptions as always about network capabilities.

With this approach, there is perhaps a risk of building the proverbial "solution in search of a problem." However, application developers may be working with out-of-date ideas about network capabilities and constraints.

Sometimes, it isn't enough to tell people about new technology; you have to show them. Network planners must be proactive in seeking new distributed applications that dramatize the change in network thinking brought about by high-speed circuits, switches and user devices.

Future broadband networks will offer performance that is two orders of magnitude higher and latency that is one to two orders of magnitude lower. Broadband networks will cut latency dramatically through use of buffering, faster circuits, faster switches and less queuing. They ultimately may approach the irreducible minimum latency — the speed of light delay from one point to another.

A key development here is cell relay, the use of short (53-byte) minipackets called cells to carry all voice, data and image. Because the cells are small, queuing delay is shortened; because their length is fixed, latency can be predicted.

In addition, it will be rare to find remote users logging on to time-shared computer systems to download files — the traditional technique known as file transfer. Instead, data base servers, file servers and software

servers will provide users with a rich multicomputer processing environment.

The impetus for many of yesterday's applications was the need to provide access to computer data at remote locations. Many of tomorrow's applications will arise from a completely different need — to support the interactive collaboration of many human beings who are geographically dispersed.

In other words, future applications that use technologies such as compound document distribution, image processing and data base servers will be driven by a fundamental need for groups of people to collaborate even though they are removed in time or in geography.

Today's work group computing is most often limited to a single LAN or collection of LANs in a campus because of the assumption that wide-area networks are slow and expensive. But this assumption is changing rapidly. This new kind of application will require a new kind of private network — one that is more intelligent, more flexible and more readily managed and of-

Sometimes, it isn't enough to tell people about new technology; you have to show them.

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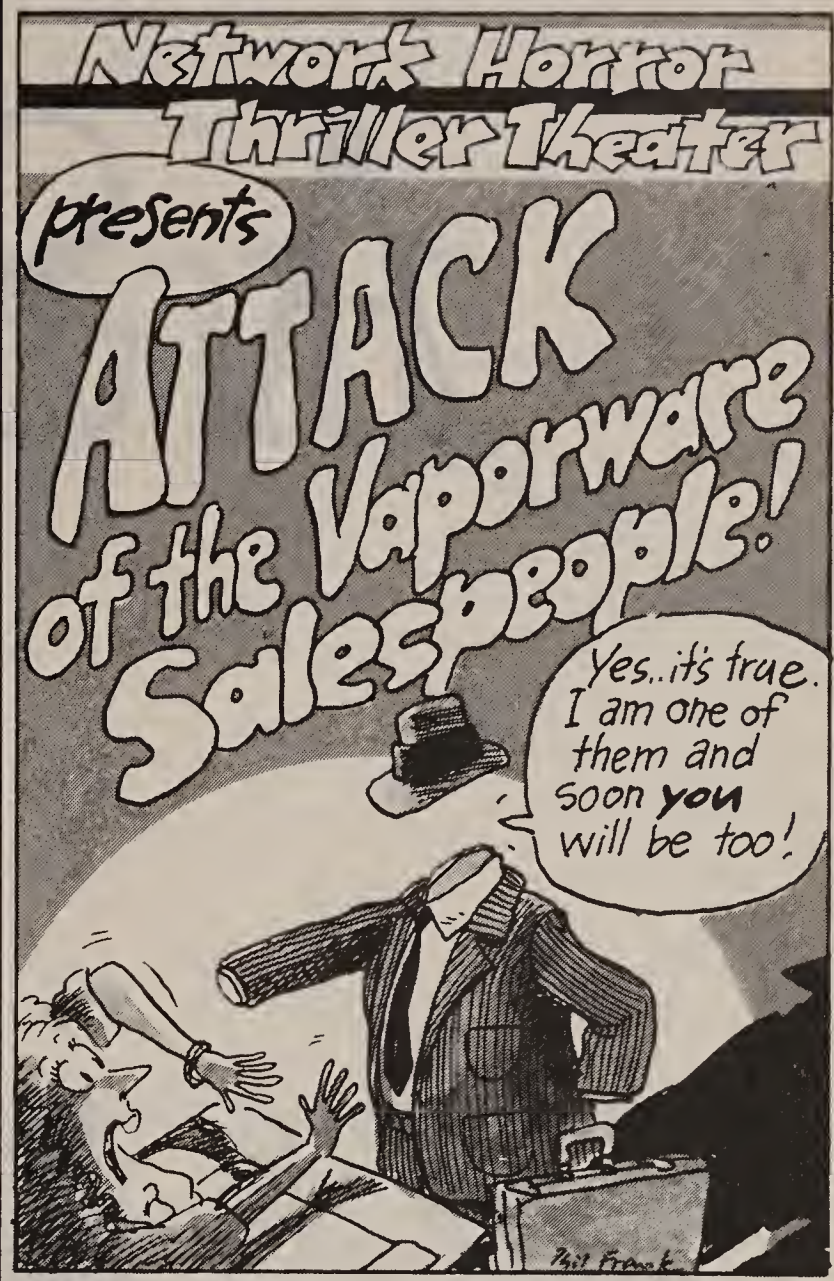
fers higher performance. We can't continue to plan our networks and our applications separately.

Therefore, the big challenge for users in the new era will be the development of their human resources. We need new technical experts and a new group of insightful technical managers who can plan these networked applications to support electronic collaboration throughout the whole organization.

The barriers to client/server computing are not technical, but managerial. Likewise, the real payoff in networked applications is not simply that they allow the use of more advanced technology. Rather, they give users a way to work together more effectively. ■

TELETOONS

BY FRANK AND TROISE



LETTERS

Zapping the alligator

I generally agree with Ira Hertzoff's Alligators in the Swamp article, "Electricians: a net's nemesis?" (NW, Nov. 5), except for the paragraph that reads as follows:

"Electricians have been known to switch phasing on three-phase motors by changing the sequence in which the wires for each phase are connected. This can change the rotation direction of the three-phase motor and make a disk drive attempt to run in reverse. Make sure to check the phase sequence before re-starting."

I wasn't aware that motors generated electricity, so assuming he meant generators, that would still not cause the drive to attempt to run in

reverse. The standard 110-volt alternating current (AC) outlets from which personal computer LAN servers draw their power — the wall outlets in your home or office — are single-phase AC, which is converted to direct current internally by the computer's power supply.

Cameron Snow
President
Network Integration Corp.
Albany, N.Y.

Network World welcomes letters from its readers.

Letters should be typed and double-spaced. Mail them to Editor, Network World, 161 Worcester Road, Framingham, Mass. 01701.

Letters may be edited for space and clarity.

LIKE ALLIGATORS IN A SWAMP, unforeseen problems can really put the bite on a communications operation. Many managers find themselves wrestling with these networking reptiles every day.

If you've survived an "alligator attack," share it with our readers by calling Susan Collins, assistant features editor, at (508) 820-7413 or fax your idea to us at (508) 820-3467. Alligators should be 1,200 words in length and submitted either on disk or via modem.

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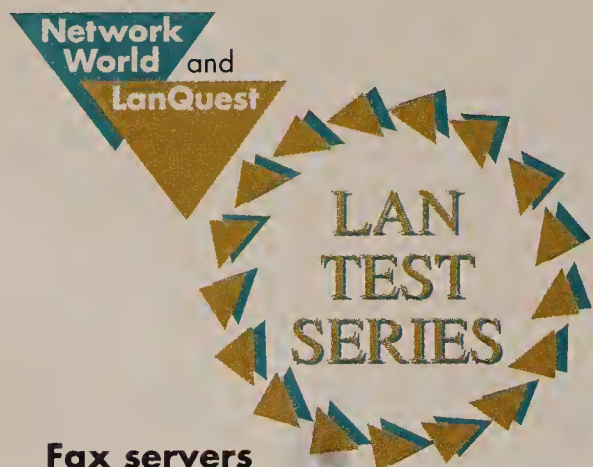


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Rating Ethernet fax servers

CONTINUED FROM PAGE 1
sending and receiving documents
in an atmosphere similar to an actual office environment.

What is a LAN fax server?

With most fax servers, including those tested, LAN workstations do not require special hardware or software to use the fax server. Such access is provided through standard LAN interfaces. Typically, the workstation uses an application software menu to access the fax server. In some cases, an optional terminate and stay resident (TSR) software driver is available for command-line input, rather than the users calling up menus.

For the purposes of this article, a LAN fax server is defined as a combined software and hardware product that integrates fax sending and receiving capabilities into a LAN system. The server may be a stand-alone unit or a fax board with LAN software.

For the product to qualify as a LAN fax server, it must allow faxes to be sent — either as files or from within applications — from individual LAN workstations and printed on a shared LAN printer.

In addition, a fax server allows received faxes to be displayed, forwarded, saved and resent from individual LAN workstations. Optionally, the product may allow received faxes to be routed automatically to individual LAN users.

However, both of these features were outside the scope of the performance testing conducted for this article. In all tests, faxes were sent from individual

Hanes is vice-president of the LanQuest Group in San Jose, Calif.

LAN workstations and received faxes were printed on a shared LAN printer.

The products

Thirteen companies with fax server products compatible with Novell, Inc.'s NetWare 286 Ethernet LANs were invited to provide products for these tests. Seven vendors accepted; six did not, mostly because they had new products in development.

Two of the products, Castelle, Inc.'s Faxpress and JetFax, Inc.'s JetFax/PC, are stand-alone fax servers that don't require installation on a fax server workstation. Faxpress connects directly to the LAN as an independent server, and JetFax/PC connects between the file server and laser printer.

The other five products are add-on boards that require installation in a dedicated fax server workstation — typically, a personal computer using at least an Intel Corp. 80286 processor or equivalent — connected to the LAN. These products are: Net Fax from All The Fax, Inc. of Great Neck, N.Y.; FAXNET from Commwave of San Diego; GammaNet from GammaLink, Inc. of Sunnyvale, Calif.; TurboFax-NET from Imavox Corp. of Santa Clara, Calif.; and NetFAX Manager from OAZ Communications, Inc. of Fremont, Calif.

The test bed comprised a NetWare 286-equipped Everex Systems, Inc. Step/33 file server,

four 80286-based personal computer workstations connected to the Ethernet LAN via 3Com Corp.'s EtherLink II Ethernet adapters, a Hewlett-Packard Co. LaserJet II printer and a 80386-based personal computer dedicated as a fax server station with 4M bytes of random-access memory, a Novell NE2000 Ethernet LAN adapter and a hard drive.

A standard office fax machine, a Sharp Electronics Corp. FO-510, was used as a destination for transmitted documents and a source for received documents. A Canon, Inc. IX-12 scanner was used to provide a scanned image for testing.

The exact configuration of the test setup varied according to the product being tested. For the stand-alone fax server products — the Castelle Faxpress and the JetFax JetFax/PC — the 386 personal computer fax server station was not used because these two products connect directly to the LAN and file server, respectively. Each of the five add-on boards was installed and configured in the 386 personal computer fax server workstation.

The tests

The tests included five types of user documents likely to be faxed in a typical business day: ASCII text, a spreadsheet using Lotus Development Corp.'s 1-2-3 Version 2.2, word processing using Microsoft Corp.'s Microsoft Word Version 5.0, presentation graph-

ics using Software Publishing Corp.'s Harvard Graphics Version 2.12 and a scanned page image obtained by sending a page with the standard fax machine to the fax server product or by scanning in a page with a Canon IX-12 scanner to produce a .PCX or Tagged Image File Format graphics file.

Most of the fax server products have two ways of sending documents: directly as a file using a menu interface and from within an application using a pop-up TSR interface. Thus, the sending tests include both interfaces if available. If both tests were performed, the best result was used.

The basics

Nine basic tests were devised for the products: seven sending and two receiving. The tests were divided into three categories: Basic Send Tests, Basic Receive Tests and Advanced Send Tests. The Basic Send Tests were:

■ **Test 1:** A one-page text document was sent in ASCII from a LAN workstation to one recipient. This test was conducted with both the menu user interface and the TSR user interface, if available.

■ **Test 2:** A one-page spreadsheet document was sent in ASCII
(continued on page 50)



Tests show significant performance differences among products.

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Jay Dinwoodie, Senior VP/Information Systems, GE Capital Fleet Services

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Easy to live with.

Their system is now running about 35,000 PC-host transactions a day, and Mr. Dinwoodie estimates that traditional technology would require about 250,000 transactions to accomplish the same work. He says, “Our SAA apps are just incredibly efficient, and they’ve been completely reliable.”

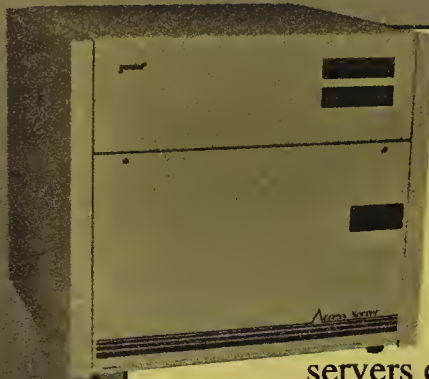
How strange that some people are still asking if SAA is for real.

“It’s just a question of confidence,” says Jay. “We knew exactly where we wanted to go and that ultimately SAA was the only way to get there. So we took that first step, we’ve never looked back, and expectations—both ours and our customers’—have been exceeded.”



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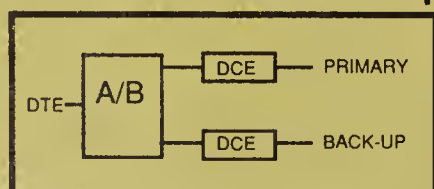
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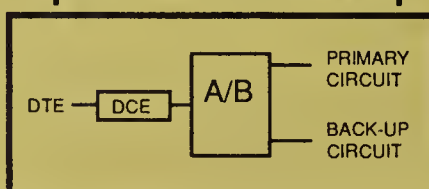
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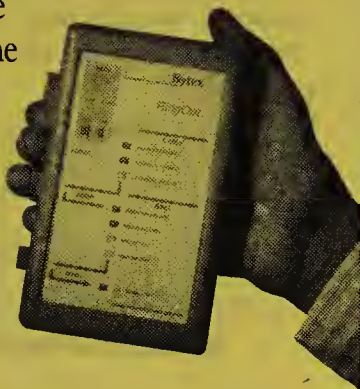
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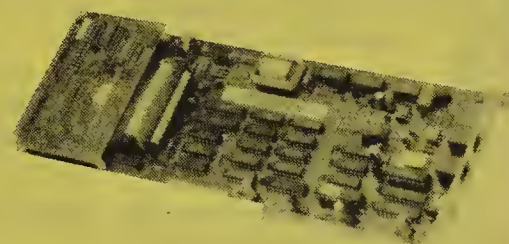
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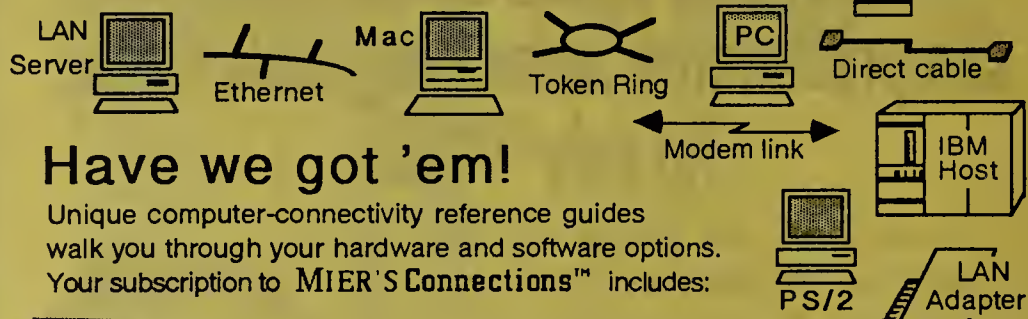
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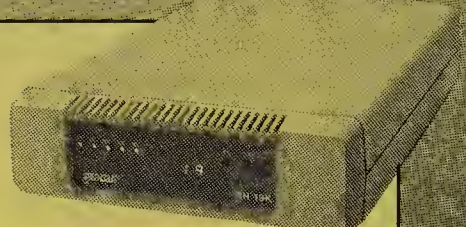
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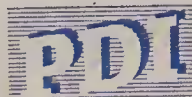


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First impressions of fax server products

Net Fax All The Fax, Inc. Great Neck, N.Y.

Net Fax, with a \$995 list price, is an add-on, half-board implementation — the only such product included in the tests. It came with fax server software on four diskettes for the base level of the product.

Although there is an Adobe Systems, Inc. PostScript-compatible conversion option for the product, it was not provided by the vendor for these tests. As a result, it was possible to evaluate Net Fax only in the basic categories of tests.

Installation of the Net Fax product went smoothly, with good documentation helping the process. Although the default hardware interrupt for the board was IRQ 3, which conflicts with the default setting for many network adapter cards, the documentation clearly warned of the possible difficulty and allowed us to avoid it.

The only configuration changes required on the network was inclusion of a DOS SET command in the logon script executed for each user, making the software installation relatively simple.

Faxpress Castelle, Inc. Santa Clara, Calif.

Castelle's Faxpress is a complete stand-alone unit with software and has a list price of \$3,995.

The product connects directly to an Ethernet local-area network and acts as its own Novell, Inc. NetWare print server. A Hewlett-Packard Co. LaserJet printer connects to the Faxpress, but the printer may be used for conventional print jobs as well as printing faxes.

Faxpress is designed to handle documents in ASCII or HP's Printer Command Language

(PCL) form directly, so for its tests, both of the word processing documents and the presentation graphics document were printed in HP PCL format.

Since Faxpress does not directly support a scanner or scanner format files, a scanned page was sent to Faxpress using a stand-alone fax machine in order to get a scanned page image for sending.

The saved document was then resent for the scanned image send test.

Faxpress' installation procedure is straightforward and well explained in the product documentation. It was necessary to create manually the directories and logon script entries required for operation on the LAN.

FAXNET Commwave San Diego

FAXNET consists of an add-on board and software on seven diskettes. The board is an OEM version of GammaLink, Inc.'s GammaFax board, but the fax server software is specifically developed by Commwave. The Adobe Systems, Inc. PostScript software option from Commwave is identical to the GammaScript software from GammaLink. FAXNET has a list price of \$1,995 for an eight-user license.

We had some difficulty installing the FAXNET software, which was resolved with a new version of the software manual and assistance from the vendor. Since FAXNET has no terminate and stay resident interface capability, saved versions of the document files with the menu interface were used to conduct the tests in all cases.

Interestingly, FAXNET was the only product tested that produced screen displays whose format matched the screen format the Novell, Inc. NetWare system utilities used.

GammaNet GammaLink, Inc. Sunnyvale, Calif.

GammaNet, with a list price of \$995, is actually three products: the GammaFax CP add-on board and software, the GammaNet fax server software and the GammaScript page description software.

As many as four boards, each with four lines, are supported for one fax server workstation. The complete set of three products consists of the one board, five manuals and 10 diskettes.

Since the GammaScript software provides support for Adobe Systems, Inc. PostScript-compatible output from the word processing and presentation graphics applications, the documents from these applications were initially set up in PostScript format. A received copy of the scanned page document was used in the send tests, as the Canon, Inc. IX-12 scanned image resulted in an image with inverted black and white.

The automated install procedure installed GammaFax and GammaNet software on a local-area network server directory and put the GammaScript software in a directory on the hard drive of the fax server workstation. The required logon script entries were created manually using an alternative installation option for NetWare.

TurboFax-NET Imavox Corp. Santa Clara, Calif.

TurboFax-NET has a list price of \$995, which includes an add-on board and software on 10 diskettes, such as a base system and the TurboScript option for Adobe Systems, Inc. PostScript-compatible printing support.

A number of other options are available, including optical character recognition software, electronic mail gateway software and an automatic system to turn on

the fax server workstation to answer an incoming call, which allows the fax server workstation to remain off during idle periods.

Although we were able to work directly with the vendor, including having a vendor representative on-site, we were not able to get the TurboScript option and the terminate and stay resident interface option to operate correctly with our applications. As a result, the tests were conducted in all cases with the menu interface using saved file versions of the documents.

JetFax/PC JetFax, Inc. Menlo Park, Calif.

JetFax/PC consists of a stand-alone JetFax/PC unit and accompanying JetFax/PC software, and lists for \$995 to \$1,995. This product is unique among those tested in that it can be used as a receiving fax machine that can store as many as 120 fax pages, which then print directly to a Hewlett-Packard Co. LaserJet printer without any connection to a personal computer or local-area network.

As configured for this test, JetFax/PC was connected to the LAN file server and the HP LaserJet II printer was connected, in turn, to JetFax/PC. This does not dedicate the printer, as the product allows printing on the printer when incoming faxes are not being printed. Since JetFax/PC supports HP Printer Command Language print format, the word processing and presentation graphics documents were printed in that format.

Getting JetFax/PC to work for multiple users on the LAN took some assistance from the vendor and some additional effort to get the software correctly installed. It was necessary to install the software in each LAN user's directory on the LAN file server in order to get the multiple simulta-

neous send test to work.

The vendor admitted this is a problem and that the product does not currently support multiple simultaneous users with one copy of the software on the LAN server. The installation procedure required some manual set-up of logon script for the LAN workstations.

NetFAX Manager OAZ Communications, Inc. Fremont, Calif.

NetFAX Manager has a list price of \$2,795. It consists of an add-on board and software on four diskettes. Like the GammaLink, Inc. product, as many as four boards are supported in one fax server workstation.

The unique aspect of NetFAX Manager is that the standard product includes electronic mail, which uses the Novell, Inc. NetWare Message Handling Service (MHS) for mail routing. The product supports Hewlett-Packard Co. Printer Command Language output, so the word processing and presentation graphics products were operated in this format.

For software installation, the NetFAX Manager was the only product tested that requires the use of MHS, although other products will optionally interface to MHS. The NetFAX Manager actually needs only a limited part of the functionality of MHS if you are not already using MHS in your organization for routing of E-mail, but this is not clearly explained in the documentation. With the vendor's help, we were able to determine how much of the NetWare MHS system was needed and then install MHS and NetFAX Manager.

The installation procedure is automated and creates all the user designations, user rights and directories needed if the procedure is followed exactly.

— Charles Hanes

(continued from page 38)
from a LAN workstation to one recipient.

This test was conducted with both the menu interface and TSR interface, if available.

■ **Test 3:** A one-page scanned image document was sent from a LAN workstation to one recipient. This test was conducted with the menu interface only.

■ **Test 4:** A one-page text document was sent from a LAN workstation to three recipients using two destination fax numbers (to the first, then the second and back to first again). This test was conducted with the TSR interface, if available. Otherwise, the menu interface was used.

The Basic Receive Tests were:
■ **Test 5:** A one-page scanned image document was received from the Sharp fax machine with

an automatic cover page included. The incoming fax was printed automatically on a shared printer on the LAN.

■ **Test 6:** A one-page scanned image document was received four times, repeated as a broadcast group using the Sharp fax machine's multiple-send capability. An automatic cover page was included with the scanned document. The incoming faxes were printed automatically on a shared printer on the LAN.

The Advanced Send Tests involve sending complex documents in HP's Printer Command Language (PCL) or Adobe Systems, Inc. PostScript format.

These tests were performed with five of the products, but the remaining two did not support either of these advanced page description language formats.

The Advanced Send Tests were:

■ **Test 7:** A one-page presentation graphics document was sent in HP PCL or PostScript from a LAN workstation to one recipient. This test was conducted with the TSR interface only if available. Otherwise, it was performed using the menu interface.

■ **Test 8:** A 10-page word processing document was sent from a LAN workstation to one recipient. This test was conducted with both the menu interface and TSR interface, if available.

■ **Test 9:** A one-page text document, a one-page spreadsheet document, a one-page presentation graphics document and a one-page word processing document was sent simultaneously from four LAN workstations to four recipients at the same fax

number. These documents were sent using the TSR interface, if available. Otherwise, the menu interface was used.

This test was the most difficult to perform because it combined several of the individual LAN send tests and performed them all at once.

The test documents were chosen to be typical of those actually encountered in an office environment. The one-page text document was approximately three-fourths of a page of text instructions for a software product, saved as an ASCII file.

The one-page spreadsheet document was printed from 1-2-3 Version 2.2 in ASCII format.

The one-page presentation graphics document was a pie chart of market share for LAN products, printed from Harvard

Graphics Version 2.12 in HP PCL (for an HP LaserJet II printer) or PostScript (for an Apple Computer, Inc. LaserWriter printer with standard fonts).

The one- and 10-page word processing documents were a company brochure document and a proposal document, respectively, printed from Microsoft Word Version 5.0 in either HP PCL (for an HP LaserJet II printer with the HP ProCollection font cartridge), PostScript (for an Apple LaserWriter printer with standard fonts), or Epson (for an Epson America, Inc. FX printer). The one-page scanned image was a company product brochure with a photograph and accompanying text, which was professionally printed.

If a fax server product did not
(continued on page 55)

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IBM's client/ server progress

continued from page 1

ities must be put in place — which is not surprising since IBM has worked closely with major customers in charting its client/server course.

“They’re at least heading in the direction we’ve been asking them to head in, which is [toward] an open systems architecture and a true client/server arrangement,” said Ira Morrow, vice-president of technical plan-

ning at Shearson Lehman Brothers in New York. “They don’t have everything we need, but at least now we’re hearing that they’re going in that direction.”

Much of the credit for that goes to the Client/Server Computing group, based here, which was formed in April 1989 to get the various IBM lines of business — such as Enterprise Systems and Communication Systems — in line on providing products that fit in with the company’s client/server model.

“We are a very irritating gad-

fly to all of IBM, especially to Enterprise Systems,” said Art Olbert, director of Client/Server Computing at IBM. “We show up to tell people that the perspective they had on the world in 1987 was wrong.”

IBM now boasts of an array of products for each of its Systems Application Architecture platforms, plus the AIX-based RISC System/6000, that lay the foundation upon which IBM will construct its client/server model (see charts, pages 54 and 57).

In IBM’s client/server vision,

functions and data requested by clients — typically workstations attached to local-area networks — can be provided by the most appropriate processor or server in a network, no matter where it is located.

Servers can be anything from Personal System/2 workstations, Application System/400 mini-computers or RISC System/6000 machines to System/370 or the new System/390 mainframes. In some instances, any of those machines can be a client in that it may request data from others.

IBM has defined the client workstations and network operating systems that work with each of its hardware platforms in a client/server mode. In addition, the company has outlined the operational, administrative and application enabling services each supports as well as the network infrastructures supported.

The company acknowledged that in some of those categories, only rudimentary capabilities are available today.

For example, the Transmis-

(continued on page 56)

NETWORK WORLD

IBM client/server computing IBM offerings for enterprisewide or work group client/server

AS/400 as server

Function/ requirement	Solution	Description/objective	Status	
Client workstations	PS/2	Family of general-purpose workstations	Available	
	RISC System/6000	Family of engineering/science workstations	Available	
Client network operating systems	OS/2 LAN Server, DOS PC LAN Program, AIX	Provides systems services and resource sharing for these server operating systems. Each runs on work group server.	Available	
Operational services	Capacity monitoring	Performance Tools	Data collection, compilation and reporting of utilization statistics	Available
	Network management (problem determination, performance, change management)	OS/400 PC Support Systems Management Utilities	Provides central repository for alerts and remote problem resolution and electronic dispatch of service	Available
	Backup/archive	OS/400 PC Support	Provides automatic backup from workstations as well as mirroring and journaling capability	Available
	Software distribution	NetView/Distribution Manager, SAA Delivery Manager	Provides software distribution from central AS/400	NetView/Distribution Manager is available; SAA Delivery Manager is statement of direction
	Print sharing	OS/400 PC Support	Provides distribution of printed output from any workstation to any local or remote workstation or host	Available
	Command procedures	OS/400 PC Support	Provides remote command support and command language compilation capability	Available
	Administration	Asset management	SAA Asset Manager, Software Resource Manager, Hardware Resource Manager	Provides ability for centralized inventory of system hardware, software and network resources
Software license manager		SAA Delivery Manager	Provides ability to control and monitor system and application software licenses	Statement of direction
Security		OS/400 PC Support	Provides authorization and access to AS/400 resources	Available
Application enabling	Program-to-program communications	OS/400 PC Support APPC/APPN Communications Utilities	Enables program-to-program communications for application usage	Available
	Data base server	OS/400 PC Support	Provides data base server support for workstation access via SQL native	Available, except for distributed relational capability, which is statement of direction
	File server	OS/400 PC Support	Provides flat files and folders via DDM or APPC	Available
	Transaction processing	OS/400 PC Support	Provides integrated functions to enable interactive transaction processing applications	Available
Networking/ infrastructure	Protocols	OS/400 PC Support Communications, Utilities, TCP/IP and OSI	Provides wide range of support for device attachment and local and remote industry standard protocols (SNA/SDLC, X.25, Token-Ring, Ethernet)	Available; statement of direction for OSI
	Bridging/routing	Teleos Communications, Inc. ISDN Resource Exchange 9000, 8209 LAN Bridge	Provides work group-to-work group connection in ISDN and asynchronous environments	Available
	High-speed support	Token-Ring Network, Ethernet, twin axial	Provides high-bandwidth access for LANs and WANs	Available
	Network technology	SNA, Token-Ring, Ethernet	Provides LAN and WAN network communications protocols	Available
	Applications	Office	OfficeVision/400, TCP/IP (SMTP)	Provides variety of office features including calendaring and E-mail
Business		Workfolder Application Facility	Controls flow of work through a business including image capture and processing	Available

System/370 or System/390 as server

Function/ requirement	Solution	Description/objective	Status	
Client workstations	PS/2	Family of general-purpose workstations	Available	
	RISC System/6000	Family of engineering/science workstations	Available	
Client network operating systems	OS/2 LAN Server, DOS PC LAN Program, AIX	Provides systems services and resource sharing for these server operating systems. Each runs on work group server.	Available	
Operational services	Capacity monitoring	Trace and Performance Tool	Obtains Token-Ring Network activity and provides reports	Available
	Network management (problem determination, performance, change management)	Controlled Access Unit, NetView, LAN Network Manager, LAN Station Manager	Monitors activity, status of workstations and LANs; optionally communicates information to central host	Announced
	Backup/archive	Workstation Data Save Facility/VM	Utilizes host resources and facilities to backup/archive workstation data	Announced (VM), statement of direction (MVS)
	Software distribution	SAA Delivery Manager, NetView/Distribution Manager	Centralized distribution and control of software to workstations	Announced (MVS/VM)
	Print sharing	SAA Print Manager	Provides consistent format for print sharing	Announced (MVS)
Administration	Asset management	SAA Asset Manager	Maintain, process and inventory for control, management of workstation and other resources	Announced
	Software license management	SAA Delivery Manager	Control and management of operating system and licensed application software	Announced
	Security	Micronyx, Inc. Triumph ! Workstation Manager	Workstation-based software that prevents unauthorized use and access of workstation resources	Announced (DOS), statement of direction (OS/2)
Application enabling	Program-to-program communications	APPC	Provides application program-to-application program communications	
	Data base server	CICS, SQL/DS and DB2 under DRDA	Provide enterprise facility to make data base services available to workstation	CICS is available, SQL/DS and DB2 (DRDA) is statement of direction
	File server	Network File Server (Data Facility Product 1.3)	Provide enterprise facility to make flat file services available	Announced (MVS)
	Transaction processing	CICS	Provides transaction processing facilities and data base access capability	Available
Networking/ infrastructure	Protocols/standards	OSI/Communications Subsystem, TCP/IP	Common interfaces to facilitate interoperation between multiple vendor systems	Available (MVS/VM)
	Bridging/routing	8209 LAN Bridge, 3172 Interconnect Controller	Interconnection facility among work groups, and among work groups and hosts	Available
	High-speed support	FDDI, Token-Ring Network	Provides high bandwidth access for LANs and WANs	Announced
	Network technology	SNA	Provides communications protocol to control network traffic	Available (MVS/VM)
Applications	OfficeVision/2	Provides office-related application support including calendaring, E-mail and telephone message services	Available (MVS/VM)	
DDM = Distributed Data Management DRDA = Distributed Relational Database Architecture SAA = Systems Application Architecture SMTP = Simple Mail Transfer Protocol				

DDM = Distributed Data Management
DRDA = Distributed Relational Database Architecture
SAA = Systems Application Architecture
SMTP = Simple Mail Transfer Protocol

(continued from page 50)

support document printing directly, as described from within the application, the document was saved as a file and used in that form. All receiving tests were performed using the automatic print capability for incoming fax documents. If the product offered the option to save the incoming fax for later display, that option was also permitted.

The sending and receiving tests were timed using a stopwatch. All sending tests were timed from the start of the fax operation in the menu interface or application until the receiving fax machine answered. The tests required that the transmission be received in complete and readable format.

For the multiple-send test, the last answer of three was the stopping point. The receiving tests were timed from the beginning of the outgoing call until the automatic printing of the document was completed and the complete document, including cover page, was available in the printer output bin. For the multiple-receive test, the time included all four documents.

Some of the products, such as the Castelle Faxpress and the JetFax JetFax/PC, seemed optimally designed for an office automation solution in a midsize organization. Other products, such as Imavox TurboFax-NET, were optimized for production use, with a lesser level of office application integration but faster performance for simple documents.

Two of the products, GammaLink's GammaNet and OAZ Com-

Test	Time (in seconds) to complete test						
	All The Fax, Inc. Net Fax	Castelle, Inc. Faxpress	Commwave FAXNET	GammaLink, Inc. GammaNet	JetFax, Inc. JetFax/PC	Imavox Corp. TurboFax-NET	OAZ Communications, Inc. NetFAX Manager
1. Send 1-page text (ASCII)	17	24	91	44	20	8	44
2. Send 1-page spreadsheet (ASCII)	15	32	91	23	47	10	61
3. Send 1-page scanned image	18	16	56	84	108	9	42
4. Send 1-page text (ASCII), 3 recipients at 2 fax numbers	138	229	201	161	157	228	286
5. Receive 1-page scanned image, automatic print	257	214	362	146	152	335	183
6. Receive 4 faxes, 1 page each, automatic print	809	594	fail	1,557	535	1,013	623
7. Send 1-page graphics document	NA	245	148	246	63	NA	110
8. Send 10-page word processing document	NA	157	150	253	280	NA	526
9. Send mixed document simultaneously from 4 workstations, 4 recipients at 1 fax number	NA	353	309	413	310	fail	671

Tests were designed to include the types of documents likely to be faxed in a typical business day.
NA = Necessary file conversion capabilities were unavailable for these tests.

GRAPHIC BY SUSAN SLATER

SOURCE: LANQUEST LABS, SAN JOSE, CALIF.

munications' NetFAX Manager, were optimized for large-volume applications with support for multiple fax lines in one fax server and optional support for automatic inbound fax routing. These products are also used as OEM products by other organizations and have characteristics such as programmable interfaces suited for this type of application.

Although all the products were able to perform our basic tests in one form or another, their varying approaches produced considerable differences in

their performance.

Basic Send Tests

All The Fax's Net Fax turned in the best overall performance, followed closely by Imavox's TurboFax-NET. Although the Imavox product was faster by far in the individual single-page send tests, Net Fax handled the multiple-recipient send test much more quickly and, therefore, captured the top ranking in this category. Both of these products appeared to be optimized for fast sending of basic documents.

Castelle's Faxpress and GammaLink's GammaNet delivered consistent performance, earning them third and fourth rankings, respectively, while good performance in the first two ASCII-based send tests and the receive test placed JetFax's JetFax/PC in a close fifth ranking. Relatively slow performance by OAZ Communications' NetFAX Manager in the multiple-recipient send test and by Commwave's FAXNET in the single-page send tests resulted in these products finishing with sixth and seventh rankings, respectively.

Basic Receive Tests

In these tests, JetFax's JetFax/PC finished with a strong first place ranking due to the product's optimization for automatic printing of received faxes. OAZ Communications' NetFAX Manager and Castelle's Faxpress finished closely behind, with second and third rankings — very respectable performances considering these products were also saving the received faxes for later display.

All The Fax's Net Fax and Imavox TurboFax-NET completed the tests in fourth and fifth rankings, respectively, and GammaLink's GammaNet ended with a sixth-place ranking due to reentries during the multiple-receive test. The Commwave FAXNET product failed to complete Test 6. Therefore, it was not ranked in this test category (see "LAN fax server failures," this page).

Advanced Send Tests

A very good HP PCL conversion capability allowed JetFax's JetFax/PC to capture an additional first place performance ranking, with Commwave's FAXNET following in second place using PostScript-compatible conversion.

Castelle's Faxpress and Gam-

maLink's GammaNet followed in third and fourth place with good-quality conversions that produced good output documents. Imavox's TurboFax-NET, OAZ Communications' NetFAX Manager and All The Fax's Net Fax were unable to handle HP PCL documents. Therefore, they were not ranked in this test category.

If you're looking for a product with good performance for sending basic ASCII or scanned documents and you do not require HP PCL or PostScript-compatible document conversion, All The Fax's Net Fax and Imavox's TurboFax-NET are good choices.

For printing received fax documents automatically, JetFax's JetFax/PC delivers excellent performance and will perform this task without a computer or network, if necessary.

If fax display, storage and forwarding is required, OAZ Communications' NetFAX Manager and Castelle's Faxpress are good performance choices as well. For sending advanced documents, JetFax's JetFax/PC, Commwave's FAXNET, Castelle's Faxpress and GammaLink's GammaNet are all good selections.

Finally, for overall consistent performance, Castelle's Faxpress proved itself an excellent choice. Although it placed third in each performance ranking, its consistency, excellent sending and receiving document quality, and overall capabilities make it quite worthy of consideration.

If you would like more information on LAN fax servers, call the LanQuest Group at (408) 283-8900 or fax your request to (408) 283-8989 and ask about the LanQuest Labs report on LAN fax servers.

This report presents complete test results and additional in-depth installation and operational information about the products reviewed here. □

LAN fax server failures

Two products failed some of the LanQuest Group tests, and these failures were significant. The Imavox Corp. TurboFax-NET product failed to correctly send all four documents in the multiple-user simultaneous-send test (Test 9). The Commwave FAXNET product failed to receive correctly all four facsimiles in the multiple-receive test (Test 6).

Imavox TurboFax-NET

In Test 9, four users simultaneously sent a fax from their LAN workstation. The four faxes each consisted of a one-page text document in ASCII, a one-page spreadsheet in ASCII, a one-page graphics document in .PCX format and a one-page word processing document in Epson America, Inc.'s Epson format.

All four faxes were sent to the same destination — the Sharp Electronics Corp. FO-510 stand-alone fax machine. The test measured the time it took to send all four faxes.

Each time this test was attempted on TurboFax-NET, at

least one document was not received or that document was received incorrectly.

LanQuest contacted Bob Gleeman of Imavox technical support, and he visited the test lab to help us install and set up the Imavox product. Unfortunately, we were not able — even with his assistance — to successfully resolve the problem. Even after the assistance of Gleeman, every time the test was attempted, one or more of the documents was not received or the document contained garbage characters.

The problem was based in the product's software code. If the faxes came in too quickly (as was the case in this test), a second fax could be partly or wholly missed while the first was being handled. Imavox said it will fix this problem in subsequent product releases.

Commwave FAXNET

In Test 6, in which the Commwave FAXNET product failed, the Sharp FO-510 stand-alone fax machine was used in its multiple-send or broadcast mode.

The one-page scanned image document was read into the machine and then sent to a broadcast group of four entries defined in the machine, all of which were the number for the Commwave FAXNET fax server.

This resulted in four faxes being sent, each being one page, one after the other, to the fax server.

The test measured the time it took to send and automatically print all four faxes.

We tried this test several times with the Commwave FAXNET product, all without success. Each time the test was tried, one or two of the faxes would be received, with the others partially received or not received at all. In each case, the Sharp fax machine produced a transaction report confirming that all four faxes were sent correctly.

Unfortunately, even with the assistance of a local Commwave sales representative and repeated contact with Commwave, we were unable to get the FAXNET to function correctly on this test.

— Charles Hanes

Int'l virtual net rates to change

continued from page 30

cents). However, outside of that four-hour window, Mercury's rates are considerably less — a flat off-peak rate of 25 pence (about 47.5 cents) vs. British Telecom's rates of 49 and 42 pence (93 and 80 cents) for the U.K.'s standard and cheap rate periods, respectively.

On-net-to-off-net rates favor British Telecom by about 3 pence (5.7 cents) across the board. Off-net access rates for the Mercury Global VPN are about 1 pence (1.9 cents) higher than the on-net access rates. British Telecom does not allow off-net access to International FeatureNet.

"We have been encouraging our Mercury customers to compare [Global] VPN to FeatureNet because we feel our feature capabilities far outstrip those offered by FeatureNet," said Ian Landy, Cable & Wireless PLC's Global VPN product manager. Mercury is a wholly-owned subsidiary of Cable & Wireless.

British Telecom managers are not worried, however. The carrier has started providing service to its first FeatureNet customers and expects to add a number of enhancements throughout 1991.

Carriers are also announcing more international connections monthly as the number of overseas countries supporting virtual nets grows.

In the past two weeks, three national carriers — PTT Telecom

Netherlands, Teleglobe Canada and United Communications in Canada — have joined US Sprint and Cable and Wireless' Global VPN marketing alliance. Telecom Ireland and International Digital Corp. of Japan are expected to follow shortly.

AT&T has continued its Global SDN expansion, having recently announced connections to Japan and France, which broadens to 15 the number of countries supporting Global SDN. Unlike the US Sprint global virtual network product in which users can call among different Global FON member countries, AT&T has set up interconnection agreements so users can call between the U.S. and a foreign country but not between different countries abroad.

However, the standards used to connect AT&T with a foreign network also allow those carriers to link with one another on a bilateral basis. By contrast, competing carriers have charged that the Global FON network architecture requires a proprietary Northern Telecom, Inc. signaling system and, therefore, is not open to any other switch types used in telephone networks worldwide.

Of the three U.S. carriers, MCI is taking a slower approach to ensure complete functionality with its international Vnet partners.

"We are waiting to be able to offer something more than just the seven-digit dialing offered by the [Global] SDN product," said Allan Palmer, product manager for MCI's Vnet product. ▀

IBM's client/server progress

continued from page 54

sion Control Protocol/Internet Protocol is cited as providing a bridging function for nets supported by a RISC/6000 server.

While TCP/IP provides inherent bridge-like communications functionality, it's not of the same ilk as a hardware-based solution such as IBM's 8209 LAN Bridge, which works with all the SAA platforms and was developed for the sole purpose of bridging.

IBM also admits that it has no offerings yet for certain key capabilities, such as tools to aid in the development of client/server applications. Users agree.

"There's still too much hand-coding and hand-testing" of client/server applications, said Shearson Lehman's Morrow.

In addition, there needs to be more synergy in the communications interfaces used by different operating systems, he said. For example, remote procedure calls are used on the Unix side, while on the Personal System/2, Advanced Program-to-Program Communications is used.

"There's a huge gap between the two," Morrow said.

Marty Vernick, manager of IBM's client/server technical office in the Programming Systems group, acknowledged that current application development tools are focused primarily on mainframe applications.

But he said his group is working with the developers of the

AD/Cycle products so that users will be able to execute AD/Cycle applications on a LAN attached to a mainframe instead of only on the host.

In addition, IBM is working with third-party vendors that can provide client/server application development tools or off-the-shelf client/server applications, Vernick said.

Network management

Another area of concern to users is network management in a client/server environment. A number of products introduced in IBM's mammoth Sept. 5 announcement address net management, such as the SAA Delivery Manager for software distribution across an SNA net plus the LAN Network Manager, Controlled Access Unit and LAN Station Manager products, all of which beef up IBM's LAN management capabilities.

An important aspect of those products is IBM's intention to provide them not only for token-ring but also for Ethernet LANs, Vernick said. "The message is IBM has a customer-driven perspective. In the past, our products were targeted at IBM-supplied infrastructures," he said.

Trav Waltrip, vice-president of telecommunications at The Travelers Companies in Hartford, Conn., said the Station Manager product will be welcome at his shop. In a client/server architecture, users need information regarding how well the clients are operating, including utilization

data, response times and the number of calls it places to servers, Waltrip said. Station Manager provides that and also lets users set thresholds to trigger alarms, just like host-based net management systems.

Another concern in a client/server environment is true distributed data base capabilities, including data integrity capabilities. To provide such distributed DBMS functions, IBM recently defined its Distributed Relational Database Architecture (DRDA), Vernick said.

DRDA describes a series of interfaces and formats DBMSs can use to communicate with one another, Vernick said. IBM will tune its own data bases, including SQL/DS and DB2, to fit DRDA and, therefore, to interoperate with one another, he said.

IBM has also submitted the blueprint to the International Standards Organization for consideration as an international standard. If DRDA is not selected, Vernick said IBM will make DRDA compatible with whatever is.

Such concern about standards is a welcome sign to users. Adherence to standards becomes even more important in a client/server environment since users need the freedom to execute applications on whatever machine makes the most sense, no matter who makes it.

But Waltrip noted that there also needs to be a standard set of calls that servers use to talk to one another and that clients can use to talk to servers.

Muxes support frame relay

continued from page 19

ment Corp., Northern Telecom, Inc. and Cisco Systems, Inc. Newbridge will also support the network management extensions defined in the joint specification supported by the other vendors.

Newbridge said it will develop frame relay software that will enable its Digital Communications Processor (DCP) board to act as a frame relay packet assembler/disassembler or frame relay switch.

"That makes the Newbridge T-1 mux into a hybrid circuit and frame relay packet switch," said John Fontenot, a network analyst with Newbridge. Other DCPs provide an interface to wide-area circuits operating at up to T-1 speeds.

With a frame relay interface installed in a Newbridge T-1 multiplexer, users can assign a group of contiguous 64K bit/sec DS0s to support circuit-switched applications such as voice and video-conferencing and another group to support bursty data traffic such as LAN communications or asynchronous terminal-to-host links. This would enable both circuit-switched and frame relay traffic to run over the same T-1 circuit.

"This gives you the best of

both worlds," Fontenot said. "Applications that work better in the circuit-switched environment, can be circuit switched. Applications that work better in the frame relay environment, such as bursty data, can be put into the packet-switched environment."

Analysts say Newbridge's approach is similar to what vendors of other time-division multiplexer (TDM) products must do to support frame relay, which many believe will eventually replace X.25 as the predominant packet-switching technology.

Vendors such as StrataCom have abandoned TDM technology in favor of a statistical multiplexing approach that packetizes all traffic, including voice, so that the entire T-1 bandwidth can be assigned on demand.

While StrataCom's approach may hold promise for the future, some analysts feel creating a hybrid circuit and packet switch based on TDM technology will meet the vast majority of user needs during the next few years.

Vendors such as Newbridge, Network Equipment Technologies, Inc. and Timeplex, Inc. are all betting that users will only want frame relay to support part of their traffic and circuit switching to support the remainder, said Mark LaRow, senior manager at Network Strategies, a con-

sulting practice of Ernst and Young in Vienna, Va.

However, creating a hybrid circuit and frame relay switch does not extend the full benefit of frame relay to users, said Nick Lippis, a principal with Northeast Consulting, Inc. in Boston.

Frame relay services currently being developed by carriers will likely enable users to pay only for the time a circuit is actually in use. To take advantage of this pricing scheme, users will have to devote entire T-1 lines to support frame relay traffic, including packetized voice.

Lippis said carriers could begin announcing frame relay service tariffs as early as next spring.

Since the Newbridge approach prohibits the DS0s assigned to circuit-switched traffic from supporting frame relay traffic and vice versa, users will have to lease T-1 circuits and pay for that bandwidth even if it is not being used.

Newbridge said users are beginning to ask for frame relay support, although they may not intend to use the technology right away. The firm also said users in some circles — such as utilities, which are able to pull their own fiber-optic cable along their rights of way — are asking for SONET-based products so they can build privately owned nets. ▀

Racal-Vadic ups modem control

continued from page 31

Not only does the CMS 910 software provide device monitoring, it also administers tests, conducts node diagnostics and generates traffic reports.

Porter said the company developed the network management system because users wanted a multitasking, multiuser system with a better user interface than currently offered on the MDS II/VA9000. Consequently, instead of a command-line interface, the CMS 910 comes with a pull-down menu interface but stops short of offering a full-screen graphical interface with icons to depict network conditions. He said Racal-Vadic doesn't see a need for that type of interface today.

The new network management system also has built-in help features that users can access via a hot-key function. The MDS II/VA9000, by contrast, forced users to log onto a separate help facility.

The CMS 910 also provides central-site control of stand-alone modems running Racal-Vadic's Modem Manager software, which enables a network manager to remotely reconfigure a modem from a CMS 910 worksta-

tion. In the event of a failure or other network event, the Modem Manager software sends an alert to the CMS 910 station; network managers can then dial into the modem and reset or reconfigure it, or remove the modem from operation and cut over to a backup.

The network management software runs on a user-supplied Intel Corp. 80286- or 80386-based personal computer with a minimum of 2M bytes of memory and 20M bytes of hard disk storage.

Users load the CMS 910 software onto the personal computer. As many as three controller cards — which provide as many as 16 port connections to various modem lines — are also plugged into the net management station.

The CMS 910 is available now. Racal-Vadic does not offer a fully configured system including a personal computer but instead sells the network management software — including The Santa Cruz Operation, Inc.'s SCO Unix Version 2.23 — for \$3,500. CMS 910 controller cards cost \$1,700 each, and Racal-Vadic VA1690 chassis — which house as many as 32 modems — costs \$2,195 each.

Racal-Vadic can be reached by writing to 1708 McCarthy Blvd., Milpitas, Calif. 95035, or by calling (800) 482-3427. ▀

"That's the missing link right now," he said.

IBM is involved in standards bodies that are working on those issues and has thrown its support behind the Open Software Foundation's Distributed Computing Environment (DCE), which addresses such interoperability issues. IBM has pledged to support DCE on AIX and all four SAA platforms.

An ongoing issue IBM is grappling with is how to make Systems Network Architecture, which was developed as a hierarchical net architecture, more compatible with client/server computing, which requires that servers communicate as peers.

Olbert said IBM's Advanced Peer-to-Peer Networking scheme has already been implemented on its System/36 and AS/400 minicomputers. Bringing peer-to-peer to mainframe environments will take longer.

"Organizationally, I know it's being done," Olbert said. "We don't have to convince the folks in Raleigh [N.C.] that the future must include peer-to-peer."

And as LANs continue to proliferate in user nets, the need to connect them efficiently will become more important.

Toward that end, IBM announced in September the IBM LAN to LAN Wide Area Network Program, which lets users em-



Home of IBM's Client/Server Computing group in Somers, N.Y.

ploy SNA backbones to interconnect remote Network Basic I/O

System-based LANs. That product was a direct result of market re-

search work from the Client/Server group, Olbert said.

IBM is also investigating emerging fast packet technologies that promise to improve the speed and efficiency with which users can link LANs, Vernick said. Fast packet would likely be supported on IBM front-end processors and would allow those machines to route LAN data more efficiently, he said.

SNA is also being rearchitected to take into account the fact that WAN links are more reliable now than when SNA was first developed. That will increase speed by reducing the amount of error checking performed, Vernick said. □

NETWORK WORLD

IBM client/server computing (continued) IBM offerings for enterprisewide or work group client/server

RISC System/6000 as server

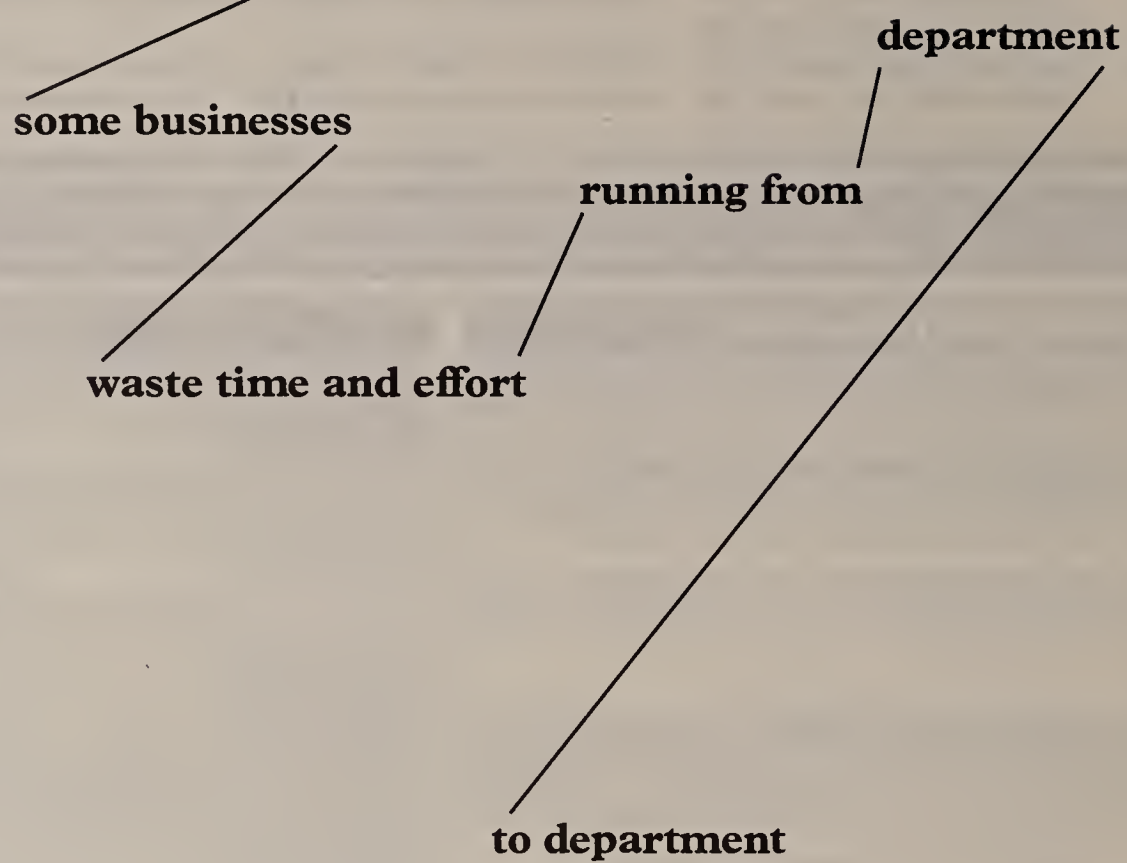
Function/requirement	Solution	Description/objective	Status
Client workstations	PS/2	Family of general purpose workstations	Available
	RISC System/6000	Family of engineering/science workstations	Available
Network operating system	AIX V3 BOS — TCP/IP	Prevalent Unix communications protocol	Available
	— Network File System	Intersystem file sharing	Available
	— Network Computing System	Network process control	Available
Distributed computing	Open Software Foundation/Distributed Computing Environment	Full function distributed computing	Announced
Operational services			
Capacity monitoring	AIX V3 BOS System Management Interface Tool	Task-oriented system management interface	Available
Network management (problem determination, performance, change management)	AIX Network Management/6000	TCP/IP network management program, supports Simple Network Management Protocol and SNA NetView alerts	Available
Backup/archive	AIX V3 BOS	Standard Unix backup/restore and IBM value-added utilities	Available
	Workstation Data Save Facility/VM	Archive to VM	Announced
Software distributions	AIX V3 BOS	Native procedures for installation and service	Available
Print sharing	AIX V3 BOS	Printer spool and queuing functions	Available
Administration			
Asset management	TCP/IP	Functions of TCP/IP support ability to control and administer workstation and system resources	Available
Software license management	Resource License Manager/6000	Controls distribution of licensed products	Available — Product Request Price Quotation
Security	AIX V3 BOS	Unix permissions, plus Department of Defense C2 and B1	Available, statement of direction (B1)
Application enabling			
Program-to-program communications	AIX V3 BOS — TCP/IP	Some program-to-program features are included in TCP/IP under AIX	Available
	AIX SNA Services/6000	SNA LU 6.2 support	Available
	Network Computing System	Distributed applications	Available
	Network File System	Distributed applications	Available
Data base server	Requirement	Provide data base availability to workstations	Statement of direction
File server	AIX V3 BOS — Network File Server	Intersystem file sharing	Available
Transaction processor	Requirement	Provide transaction processing application service to workstations	
Networking/infrastructure			
Protocols	AIX V3 BOS AIX SNA Connection Services/6000	TCP/IP, LU 0, LU 1, LU 2, LU 6.2, X.25	Available
Bridging	AIX V3 BOS	TCP/IP communications facilities	Available
High-speed support	Token-Ring Network, Ethernet, FDDI	Provides high bandwidth access for LANs and WANs	Token-Ring and Ethernet are available; FDDI is announced
Network technology	Token-Ring Network, Ethernet, SNA	Provides LAN and WAN communications protocols	Available

PS/2 as server

Function/requirement	Solution	Description/objective	Status
Client workstations	PS/2	Family of general purpose workstations	Available
	RISC System/6000	Family of engineering/science workstations	Available
Network operating system	OS/2 LAN Server	OS/2-based LAN attachment and management operating system	Available
	DOS — PCLP	DOS-based LAN attachment and management operating system	Available
Operational services			
Capacity monitoring	Trace and Tool Performance	Obtain Token-Ring Network activity, and provide reports. DOS application	Available
Network management (problem determination, performance, change management)	Controlled Access Unit, LAN Network Manager, LAN Station Manager	Monitors activity, status of workstations and LANs	Announced
Backup/archive	Systos Plus for IBM	Workstation data backup/archive facility	Available
Software distribution	Requirement	Software distribution, server to workstation	
Print sharing	OS/2 LAN Server, DOS — PCLP	Print server support including spooling	Available
Administration			
Asset management	LAN Station Manager, Controlled Access Unit	Provides hardware and adapter information and control	Announced
Software license management	Requirement	Control and license management of software	
Security	Micronyx, Inc. Triumph I Workstation Manager	Provides workstation hardware security and access control	DOS is available; OS/2 is statement of direction
Application enabling			
Program-to-program communications	APPC across SAA Platforms	Facility to communicate between application programs	Available
Data base server	OS/2 Extended Edition (DB2)	OS/2 data base support in OS/2 Extended Edition	Available
File server	OS/2 LAN Server	Server support for DOS, X Windows and OS/2 clients	Available
Transaction processing	CICS OS/2	Transaction processing-oriented data base system	Available
Networking/infrastructure			
Protocols	ASCII Emulation and NETBIOS	Communications between workstations and ASCII source communications of Token-Ring	DOS is available; OS/2 is announced
Bridging	8209 Bridge	LAN bridging Token-Ring-to-Token-Ring or Token-Ring-to-Ethernet	Available
High-speed support	FDDI, Token-Ring Network	Provides high bandwidth access for LANs and WANs	Token-Ring is announced; FDDI is statement of direction
Network technology	Ethernet, FDDI, Token-Ring Network	Provides communications protocol across the network	Available
Applications			
Office	OfficeVision/2	Provides office-related application support including calendaring, message and telephone messaging services	Available

PCLP = PC LAN Program
SAA = Systems Application Architecture

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AT&T shifts Tariff 12 tactics

continued from page 1

[VTNS] options, which saves time, resources and money for AT&T and users," said Henry Levine, an attorney specializing in telecommunications with the law offices of Morrison & Foerster in Washington, D.C.

Dennis Lewis, executive director of AT&T's opportunity management center, said AT&T will try to fit new customers into existing VTNS options that match the customer's needs but, if that fails, it is willing to negotiate new options.

Customers that agree to buy an existing option must agree to the deal's length, its minimum annual charge and to use at least the same amount of switch ports and lines, Lewis said.

If a company wanted to sign up for a Tariff 12 deal put together for another company but needed fewer lines than specified in the original option, the initial customer would have to agree to the corresponding change, Lewis said.

A major benefit of buying existing deals is that they are not subject to the Federal Communications Commission review process to which new VTNS options are subject. Users can get their custom networks up and running faster and often without revealing their identity.

But others complain that no two companies' requirements are identical and, as such, the best deals are those that are individually crafted.

Liza Draper, Enterprise Network Service program director for Gartner Group, Inc., a Stamford, Conn., consultancy, said AT&T is "working from a tem-

plate" with Tariff 12. "It's really up to the user to push for their own option. They don't offer [users] anything they don't ask for."

AT&T has, in fact, met with mixed results in its efforts to attract users to existing VTNS options. While several companies have bought them, others have rejected the approach and persuaded AT&T to create new options.

Conagra, Inc., Gillette Co., Matrixx Marketing, Inc., Norton Co. and Polaroid Corp. have signed up for Colonial Penn Group, Inc.'s VTNS Option 32, a three-year, \$3.1 million-per-year arrangement for long-distance services that calls for the use of few dedicated facilities.

Industry sources say a second user has signed up for General Electric Co.'s five-year, \$2.2 million-per-year agreement, VTNS Option 7.

"Going with an existing option lets you get your network up faster because you don't have to deal with all the legal mumbo jumbo and then hit the FCC," said Curtis Peterson, vice-president of MIS for Matrixx Marketing, a telemarketing service bureau in Ogden, Utah. "This approach could be up to a year faster than negotiating and [processing] a new option."

Matrixx Marketing successfully negotiated with AT&T to make modifications to Option 32 to best match it with the service bureau's needs, Peterson said.

Morrison & Foerster's Levine said users that move to existing options can begin realizing savings generally associated with a Tariff 12 faster. "Before, AT&T had to move customers to [Software-Defined Network service] so they could start realizing savings while their VTNS option was

being filed and processed."

Marine Midland Bank, N.A. would have preferred to buy an existing option to get the network up faster, rather than negotiate a new deal subject to FCC approval and possible delays.

"I really wish AT&T had found an existing option that closely matched our current network," said Cathy Schwab, a project manager with Marine Midland's information systems group. "It would have meant a much shorter time interval to get the network going. But, the companies with the same type of network as ours were smaller or had operations in different regions. None of the existing options was even a close fit."

As a result, Marine Midland and AT&T negotiated a new VTNS option, Option 73.

Other users, such as Equifax, Inc., an information services firm in Atlanta, say they want to steer clear of existing options.

"AT&T searched for an existing option that would match our network needs," said Tom Hill, a member of Equifax's communications department. "They told us that going with an existing option would speed up the process since it would not require a new filing or FCC approval."

But Equifax was not interested in buying another firm's VTNS option. "Each VTNS option has its own price structure and terms and conditions designed for the original customer," Hill said. "We wanted a price structure and terms that fit our specific needs."

AT&T eventually offered Equifax its own VTNS option, Hill said. Equifax now has custom proposals from AT&T, MCI Communications Corp. and US Sprint Communications Co., but it has yet to decide which offer to accept. ▀

NetView users to get price relief

continued from page 1

Corp., which is currently considering migration to Version 2. Under the pricing announced in September, Travelers faced a price increase in excess of 65% per year for Version 2, said Jim Oleksiw, telecommunications director for the company.

"With a big price increase, you're encouraged not to move," Oleksiw said. "Different pricing will make the transition easier and may even accelerate it."

IBM decided to change its NetView Version 2 pricing after talking to dozens of customers, sources said. IBM found it had misjudged which of the three NetView components users would be most likely to buy. Consequently, its pricing structure backfired.

The original structure was based on the belief that many users would opt for the Standalone System Option, a NetView package used to manage single-host nets. That package includes software that supports an operator interface but has none of the NetView-to-NetView communications functions of the distributed and centralized NetViews.

The more expensive Central System Option has all the same features as the stand-alone version and is typically implemented on only a small number of System/370 or System/390 mainframes in a multihost network. It collects management data from Distributed System Option NetViews, the least expensive of the three components. Distributed System Option software runs on other hosts in the same net and

controls devices connected to them.

After discovering it had overestimated how many users would opt for the stand-alone version, IBM decided to make that version an option under its central system package. That will make the stand-alone option more expensive, although it will be priced less than NetView Version 1.

IBM also plans to reduce the price for the Central System Option for mainframes in processor Model Group 25 and above, while it will raise announced prices for those in Group 20 and below. Similarly, prices for the Distributed System Option will fall for mainframes in processor Model Group 31 and above, and prices will rise for Group 30 and below.

Overall, the new pricing structure should make it much easier for large IBM users to justify upgrading to Version 2.

For example, sources said one user with three Central System Options and at least 10 Distributed System Option packages was facing a price increase of more than 60% to upgrade from Version 1 to Version 2 under the old scheme. With the new pricing scheme, the same configuration will cost only 15% to 20% more.

IBM will also reduce the price of the workstation software required for its OS/2-based Graphic Network Monitor Facility, which provides a graphical front end to NetView.

Users had complained that the \$8,000 price tag for that software was too high, given that they needed multiple copies of it. Sources said IBM will reduce that price but the new prices were not final at press time. ▀

US Sprint preps upgraded Insite

continued from page 2

that US Sprint will sell separately, in groups or as a full system. For example, US Sprint customers that use only the carrier's 800 service could buy the module for that service only.

Customers can use Insite II to access both general management and product-specific capabilities.

General management functions encompass network monitoring, traffic control, trouble-ticket management, messaging, invoicing and various administrative functions.

Product-specific capabilities include the ability to reconfigure the carrier's VPN, 800, FONCard, Clearline private-line and WATS offerings. This group will be expanded to include US Sprint's ISDN Primary Rate Interface service in future releases.

With Insite II, users can build a map of their portion of the carrier's net and perform real-time 800 call routing using the graphical user interface.

Insite II will enable customers to monitor alarms generated from access lines and the US Sprint net based on a severity rating preset by the customer. Serious events can cause a window to pop up, while a less serious event could be displayed on the network map or recorded in a log.

US Sprint customers will be

**Insite II enables users
to view and print traffic
data from net switches
for up to a year back.**



able to use Insite II to open and monitor progress on trouble tickets. The system also offers an electronic mail feature that enables users within a company to exchange messages.

Insite II will let users display a graphic that shows which sites

are being billed for US Sprint services. In future releases, customers will be able to access and reassign invoices and reports from the graphical display.

The network management system can be used to activate and deactivate FONCards in near real time and monitor trunk group alarms for all events on US Sprint services. Insite II also enables users to view and print out traffic data from network switches for up to a year back.

Analysts said US Sprint's Insite II will compete head-to-head with AT&T's Accumaster Integrator and MCI Communications Corp.'s Integrated Network Management System.

"Insite II is good news for companies that only use US Sprint services," said Steve Sazegari, a senior industry analyst with Dataquest, a San Jose, Calif., consultancy. "Companies that use services from a mix of carriers will want to hook up Insite II to other carriers' network management systems."

US Sprint would not divulge Insite II pricing. ▀

Patent Office turns down claims

continued from page 6

mid-January to what he called "a rehash of the same arguments" that the Patent Office took action on during the summer.

"We will put in our arguments with the Patent Office, and we will strenuously prevail," he said. "We're not concerned at all."

The recent Patent Office action is not considered final since Soderblom still has an opportunity to respond, Harding said. In fact, even if Soderblom cannot persuade the Patent Office examiners to change their minds, he has other options, which include bringing the case to federal court.

That could cause the case to continue for months, Harding said.

Vendors applauded the Patent Office's latest action.

"This action really goes to the heart of the issues involved in the case," said Ed Murray, director of North American operations for Madge Networks, Inc., which is being sued by Soderblom in a separate dispute over Madge's refusal to make royalty payments pertaining to the token-passing patent.

"It clearly explains why [Soderblom's] patent isn't applicable to IEEE 802.5. It leaves no doubt," he said.

Madge suit

Soderblom's suit against Madge Networks is scheduled to go to trial during the first week of April, according to a Soderblom attorney. Soderblom lost a suit against Madge Networks in June regarding the U.K. version of his patent. He has appealed that decision.

According to Madge Network's Murray, a resolution of the Soderblom issue will enable vendors participating in the infant Fiber Distributed Data Interface market to forge ahead with their product plans and rollouts.

"It's fair to say that the Soderblom case has been slowing down FDDI," Murray said. "Right now, everyone wants to get into the FDDI market, but they are in a holding pattern in that they don't want to sign a license agreement with Soderblom until they see what the outcome of the patent case is." ▀

AT&T riles users over plan

continued from page 2

Michael Powers, communications manager at Mercantile Stores in Fairfield, Ohio. "We currently get the equivalent of the QualNet service for free; after Jan. 1, we'll have to pay for it."

Powers said QualNet will cost Mercantile Stores approximately \$216 per T-1 per month in addition to a onetime setup fee and other monthly charges. Powers said he wouldn't speculate on the total cost of the QualNet package until after he sits down with QualNet product managers sometime this month.

AT&T officials, however, said QualNet is a much enhanced service compared with what users currently get through CNS centers. They also said it is a cost-effective way for companies with multiple interconnected PBXs to obtain net management support.

QualNet offers customers a single point of contact — available 24 hours a day — to resolve problems on their multiple-location PBX networks, even if those problems involve other vendors' equipment, said Len Scudato, QualNet product manager at AT&T Business Communications Systems in Bridgewater, N.J.

Under QualNet, technicians will handle remote alarms from AT&T PBXs as well as troubleshoot problems on other premises-based communications equipment, such as voice mail systems. They will also manage problems on transmission facilities terminating on a customer's PBX by referring them to other AT&T service centers. The problems will then be tracked until they are resolved, Scudato said.

In contrast, the CNS centers perform troubleshooting only for AT&T circuits in ETNs and virtual voice networks, and must farm out premises-based problems to other AT&T service centers, causing significant delays, Scudato said. The CNS centers are also only open during normal business hours and generally won't manage problems occurring on other vendors' equipment.

While most AT&T customers agree that QualNet provides enhancements, many are not sure it's worth the extra money.

"QualNet doesn't give most of us much more than we get today, except we have to pay for it," said Russell Fiske, vice-president of network planning and management at C&S/Sovran Corp., a large regional bank based in Richmond, Va.

Now that AT&T is charging for

support services, many AT&T customers said they are going to hold the company accountable to a higher standard of performance. "When the service was free, we didn't push AT&T too much," Fiske said. "Now we're going to make sure we get our money's worth."

Users said they will sign up for QualNet this year but are actively exploring other options, including performing network management in-house and subscribing to other AT&T fee-based net management services, such as Network Management Center, which is offered by AT&T's Network Services Division.

Fiske said bringing network management in-house would require companies to retrain their technicians and purchase hundreds of thousands of dollars of net management equipment, such as AT&T's Accumaster Integrator.

Although it would involve a substantial investment, performing network management in-house would be less expensive in the long run than footing the annual bill for QualNet, Fiske said.

Other customers are enthusiastic about QualNet.

"QualNet will be extremely beneficial to us," said John Del Vecchio, vice-president in charge

of voice telecommunications services at J.P. Morgan, Inc., a large New York bank and a user of AT&T equipment and services. "We don't think the cost is excessive compared to the scope of service it provides."

Del Vecchio said QualNet provides a single place to handle all of the bank's network alarms and service calls. Currently, PBX alarms or other service problems are addressed by several AT&T service groups, depending on which equipment or services need troubleshooting or repair.

QualNet will help the bank manage AT&T and improve security by giving it better control over vendor access to the network, he said.

In addition, QualNet provides J.P. Morgan with around-the-clock coverage.

Marketing concerns

Other customers are disturbed by the QualNet announcement because they say it reflects a new AT&T marketing strategy to break out so-called value-added services and charge for them. Traditionally, AT&T has provided various support services free of charge as part of its overall product or service package.

Even though AT&T prices for network services are generally

higher than those of other carriers, customers said they could justify the expense to upper management because of the free value-added services.

"Customers are unhappy because they already pay a premium to use AT&T services," said Neil Martin, director of the Organization of Network and Equipment (ONE) Users Group, which comprises 125 companies that are major or national accounts of AT&T. AT&T announced QualNet at a ONE Users Group conference in September and discussed the service with the group's officials prior to launching it.

"Any good network manager will now sit down and analyze the overall cost of obtaining products or services from AT&T vs. the real value they get for their money," Martin said.

Some customers said they realize that AT&T is under pressure to bolster its revenue base, which is being buffeted by fierce competition, and that it can no longer afford to provide value-added services free. But this hasn't mitigated their unhappiness.

As Tom Lonsbury, president of the ONE Users Group, puts it, "It's a nasty world, and you have to pay for these things, but that doesn't mean we have to like it." □

Ch



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AT&T's QualNet areas of service

AT&T's QualNet Enhanced Support Program, which will be offered out of an AT&T service center in White Plains, N.Y., comprises four basic support services: maintenance, engineering consultation, provisioning and implementation.

Customers can qualify for QualNet if at least 50% of their private-line endpoints terminate on AT&T private branch exchanges.

■ **Maintenance.** QualNet service representatives in White Plains will be available seven days a week, 24 hours a day to analyze and track problems on customers' PBX-based integrat-

ed voice and data networks.

If a problem involves another vendor's equipment or circuits, the QualNet representatives will make the appropriate calls and track the problem until it's resolved.

QualNet representatives will also monitor remote alarms on AT&T PBXs under warranty, lease or maintenance contracts, and clear them remotely if possible.

QualNet will not monitor remote alarms from AT&T PBXs not under warranty. Customers with products not under warranty will have to call in any problems.

If a technician needs to be dispatched, customers will be charged for time and materials, depending on the terms of their PBX maintenance contract.

■ **Engineering consultation.** QualNet engineers will help customers build and update network routing tables for AT&T and non-AT&T PBXs.

■ **Provisioning.** AT&T will assist customers in the cutover of network equipment and facilities.

The carrier will also perform all necessary tests to ensure that network routing tables are accurate.

■ **Implementation.** AT&T will

update customers' AT&T PBXs with new software releases or network routing changes from a central location.

Pricing for QualNet depends on the size of a customer's network and the percentage of AT&T equipment in it.

Monthly charges begin at \$2,700 for networks with as many as 400 net termination points.

In addition, there is a \$10,000 setup fee and a onetime charge of \$1,000 per PBX, which AT&T will waive for customers that sign up for QualNet before Jan. 1.

— Wayne Eckerson

User Alliance signs with COS

continued from page 6

In the next step in the evolution of the User Alliance, Huber and other members are asking the 835 supporters to ante up the COS dues — ranging from an annual \$150 to \$25,000 fee, depending on membership status — to officially join the user group.

"One-quarter or one-third will be willing to come forward with money," Huber predicted.

The first few official User Alliance members include The Boeing Co., Deere Technical Services, Eastman Kodak Co., E.I. du Pont de Nemours & Co., General Motors Corp., Hughes Aircraft Co., the National Institute of Standards and Technology and Tennessee Eastman Co.

During the next User Alliance meeting, scheduled for March 12 to 14 in Dallas, the group will set up official bylaws as well as finalize various action items ranging from proposed congressional lobbying efforts to education of top executives on the need for open systems in today's computer networks.

"You're going to start to see the real benefits of open systems in the next year," Huber said. □

Group lobbies for encryption

continued from page 6

the standard because government and banking regulations often require adherence to NIST standards.

DES and public-key systems, with limited exceptions, face U.S. export restrictions. "But regulations do not hamper foreign ven-

dors from selling their products here," Levine said. "Government policy should be changed to eliminate export restrictions."

Sales of U.S. products, as well as investment in the technology, will be hampered until restrictions are lifted, Levine said.

Although James Burrows, director of NIST's National Computer Systems Laboratory, earlier this year told a congressional

subcommittee that NIST would release a public-key encryption standard in September, no public-key standard has yet appeared.

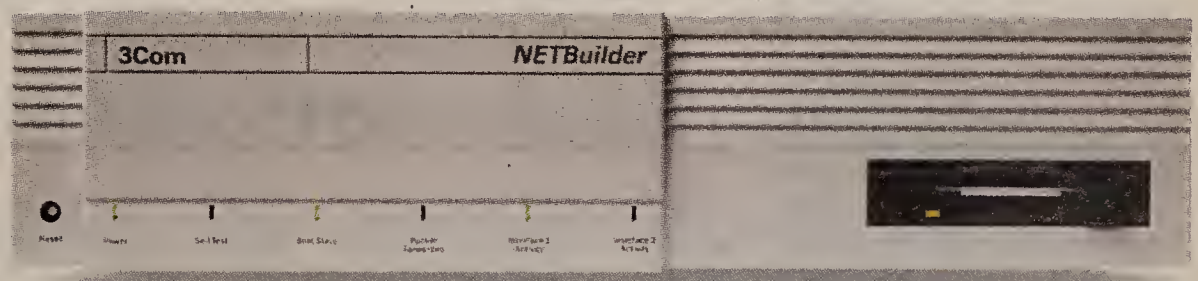
High-level officials at NIST who requested anonymity told *Network World* that NIST would probably release a public-key standard in the spring.

But despite the lack of a government standard, the RSA Public Key Cryptosystem, which was de-

veloped by RSA Data Security, Inc., has emerged as a de facto standard.

As use of the RSA public-key algorithm grows, NIST's choice of a standard is becoming more urgent. If NIST does not select the RSA algorithm as the new public-key encryption standard, vendors will have to face tough decisions about revamping products to fit the standard. □

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See The FAXNeT Form on Page 24

DEC distributed in NAS plan

continued from page 1

build support for the Open Software Foundation's (OSF) Distributed Computing Environment into NAS and released a catalog listing 1,200 available NAS-based applications (see "DEC to base wares on DCE," this page).

"We're extending NAS to focus on the distributed aspects of applications," said Dennis Phelan, DEC's NAS marketing manager. The tools pave the way for developers to distribute application processing tasks across different systems on the network.

Previously, NAS defined how to build client/server applications that enable, for instance, data base applications running

sageQ on the client.

The client component creates a message and forwards it via DECnet to the server, which checks the message address and passes it on to the target node for processing.

DECmessageQ's server works with DEC gateway software running on the VAX to pass messages to applications running on Transmission Control Protocol/Internet Protocol networks or via an LU 6.2 gateway to IBM mainframe applications running under IMS or CICS. DEC is considering building LU 6.2 links to applications on other IBM systems.

‘‘We’re extending NAS to focus on the distributed aspects of applications,’’ Phelan said.



on microcomputers to access data on a server.

Form follows function

Developers will use DECmessageQ or ACA depending on the type of application they are building. Transaction processing applications that periodically need to exchange data are best suited for DECmessageQ, while those that rely on other systems for critical information to process a task are better linked via ACA.

For example, DECmessageQ can be used to enable an order entry application on one system and an inventory control application on another to exchange messages to determine whether a product being ordered is in stock. The order entry clerk can enter other information about the order while waiting for the inventory control system to confirm whether the company has the product in stock.

On the other hand, ACA is better for building applications that, for instance, require immediate response from several other systems or that must pass a compute-intensive task to a larger processor and await a response before continuing processing.

DECmessageQ consists of client software running on VMS-, Ultrix-, DOS- or OS/2-based systems. The software works with a server component, running on a VAX, that routes messages between applications.

"This messaging system is not a mail system," Phelan said. "It is an interprocess application-to-application messaging system."

But it uses many of the concepts associated with E-mail. For instance, applications on one system use an application program interface that consists of 12 software calls in order to pass data or groups of commands to DECmes-

Without DECmessageQ, programmers must write elaborate routines into each application that specify which node a target application is running on and then issue a set of commands to establish a session with that application.

DECmessageQ stores messages in a queue on the local system or on the server if the target system is not available and delivers the message once the system or network is operating. It can also send the same message to multiple systems or deliver certain messages immediately while holding others in the queue for delivery at a specified time.

ACA, on the other hand,

DECmessageQ will benefit users linking applications over wide-area networks.



makes use of RPCs encapsulated in software objects to create application-to-application links in real time. ACA defines how developers can build objects that contain the commands needed to establish links with other systems and perform certain tasks.

Under ACA, objects can be built into an application and be represented as an icon on an end user's screen. When a user clicks on the icon, all the commands within that object are invoked.

For example, clicking on an icon of a document causes an object in the application to establish a link to the system where the document is stored and invoke the commands needed to transmit it to the user.

ACA can be used to build appli-

cations running on all the systems under the NAS umbrella, including VMS, Ultrix, Unix, DOS, OS/2 and Apple Computer, Inc. Macintosh systems.

ACA also fits into DEC's Compound Document Architecture by replacing the LiveLink feature built into DECwrite and DECdecision. LiveLink enables DECwrite to transparently establish a session with DECdecision running on another system, allowing it to load a spreadsheet into a word processing document, for instance.

DEC said it will submit its ACA to standards bodies such as the International Standards Organization, the Object Management Group and OSF, which are trying to define standards for object-oriented programming.

LAN vs. WAN

DECmessageQ will benefit users linking applications over wide-area networks, while ACA is better supported on local-area networks, said Howard Niden, director of Price Waterhouse's Great Lakes VAX Consulting Practice in Chicago.

For instance, using DECmessageQ will enable a local processor to perform other tasks while a message is transmitted to a remote site. Using ACA for the same purpose forces the local application to wait several seconds until the response comes back.

ACA will compete against the object linking and embedding (OLE) architecture jointly developed by Aldus Corp., Lotus Development Corp., Micrografx, Inc., Microsoft Corp. and WordPerfect Corp., said Cliff Conneighton, program director of office information systems at Gartner Group, Inc. in Stamford, Conn.

OLE enables users to copy data from one application to another

DEC to base wares on DCE

MAYNARD, Mass. — Digital Equipment Corp. last week said it is committed to using the Open Software Foundation's Distributed Computing Environment (DCE) as the basis for its Network Application Support (NAS), a blueprint for building networked applications on DEC and non-DEC systems.

DEC said OSF's set of distributed application development tools will provide the foundation for all NAS applications and that the tools will be incorporated in NAS over the next 18 months. DEC developed three of the seven core software technologies that compose DCE and worked with Hewlett-Packard Co. to develop another.

The heart of DCE is a remote procedure call (RPC) built by DEC and HP that enables an application on one system to instruct an application on another system to perform a specific task. DCE also includes network directory services, a distributed file system, a multithreading

service that ensures that distributed computing tasks are handled by various systems in the proper order, a distributed time clock, security tools and support for Microsoft Corp.'s LAN Manager X.

Building support for DCE into NAS is not a surprise, said Cliff Conneighton, program director of office information systems at Gartner Group, Inc. in Stamford, Conn. "But it is noteworthy [in that] DEC is saying all future NAS products and services will be built on DCE."

DEC last week said it has published a catalog listing about 1,200 applications developed by 650 third parties under existing NAS guidelines and said it has published a six-volume set of NAS specifications for writing NAS-based applications.

Hard copy versions of the NAS Documentation Set are currently available while a CDROM version will be available next month. Both versions cost \$60.

— Jim Brown

EC plan to relax restrictions

continued from page 2

onto higher speed circuits running to a third country, such as the U.S., according to Ron Bell, head of group telecommunications at The British Petroleum Company PLC in London. Instead, Bell said some European carriers require users to run high-speed circuits to the European hub or directly to the third country in order to make more money.

The leased-line directive "should make it easier to build private networks by making it easier to interconnect circuits and to one-stop shop," said John Roberts, director of regulatory affairs at the Telecommunications Managers Association, a leading U.K. user group, and head of the telecommunications management consulting practice at Interconnect Communications (Consultants), Ltd. in Chepstow, Wales.

"It should help users by dealing with fundamental issues of private networks," said John Simmons, a consultant with Logica SA/NV in Brussels who has been working on the leased-line directive and other directives for the European Commission for the past two years.

On the technical side, one of the most helpful things the directive is expected to propose is that carriers be required to offer four types of private lines, using standard interfaces, throughout the European Community.

As currently drafted, the directive will require carriers to offer ordinary quality, two- and four-wire analog voice circuits;

high-quality, two- and four-wire analog voice circuits; 64K bit/sec circuits; and 2M bit/sec circuits. Carriers will be required to support each service using standard interfaces by July 1, 1992.

Regulatory requirements

On the regulatory side, the draft stipulates that tariffs for private lines be cost-oriented and that carriers not be allowed to maintain restrictions on the interconnection of leased lines among themselves or to public telecommunications networks exceeding what are dubbed "essential requirements."

These requirements include stipulations that users not employ leased lines to sell public switched voice telephone services in competition with monopolistic carriers.

In addition, the current draft states that carriers should offer one-stop shopping and billing services for pan-European private networks, prohibits carriers from unfairly bundling services and equipment into a single tariff, bans cross-subsidization of competitive services with revenue from monopoly offerings, and requires carriers to make tariffs and network regulations easily accessible by anyone who wants the information.

According to Simmons, some of the language in the draft, which was distributed on a confidential basis Oct. 9, could be modified before it is officially proposed for adoption as a European Community directive. He added, however, that these changes would be unlikely to alter the basic thrust of the regulatory reforms. ■



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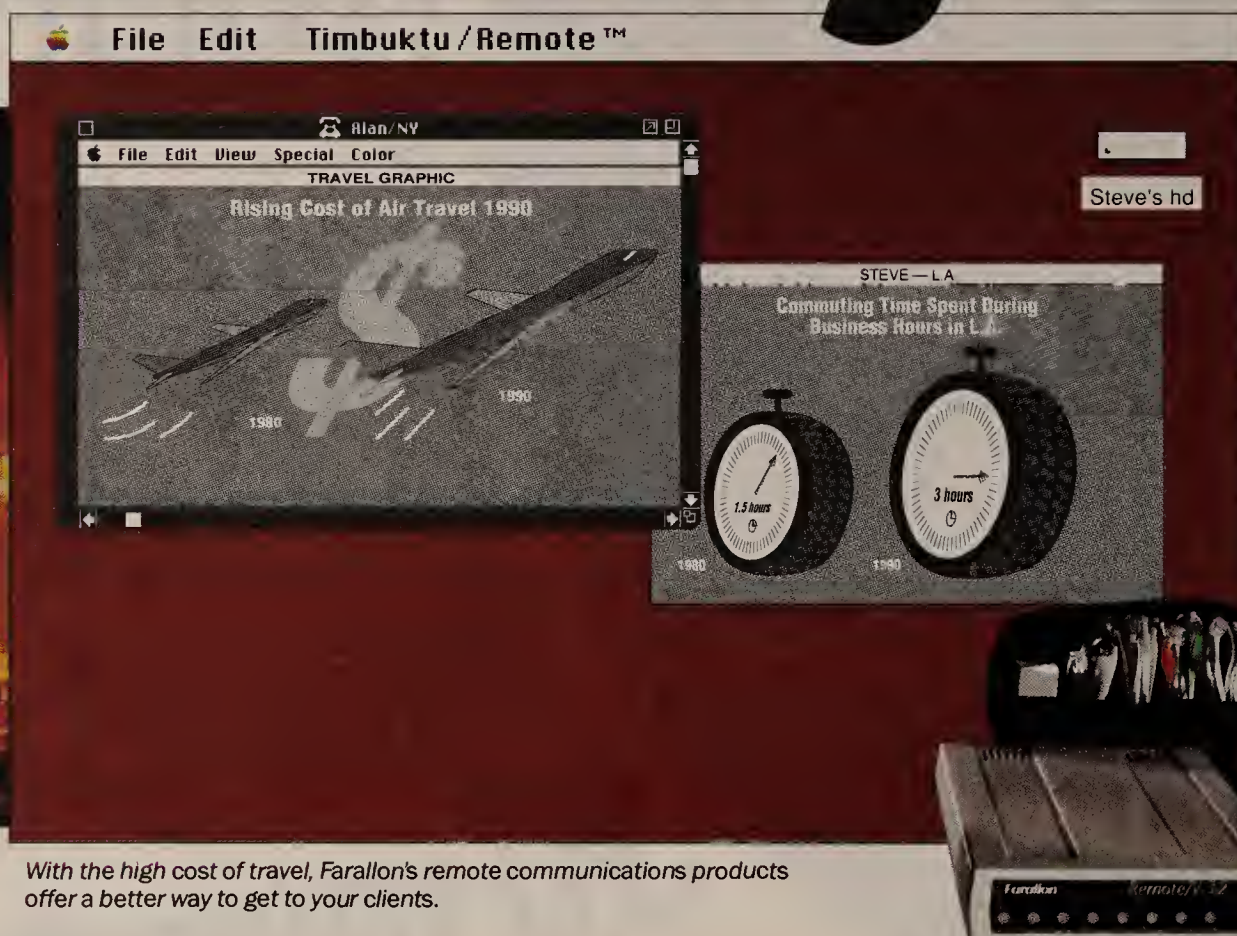
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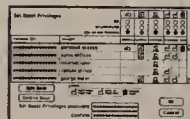
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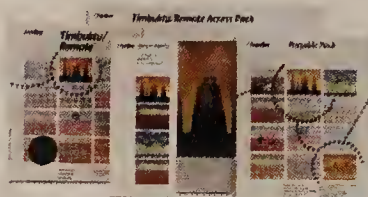
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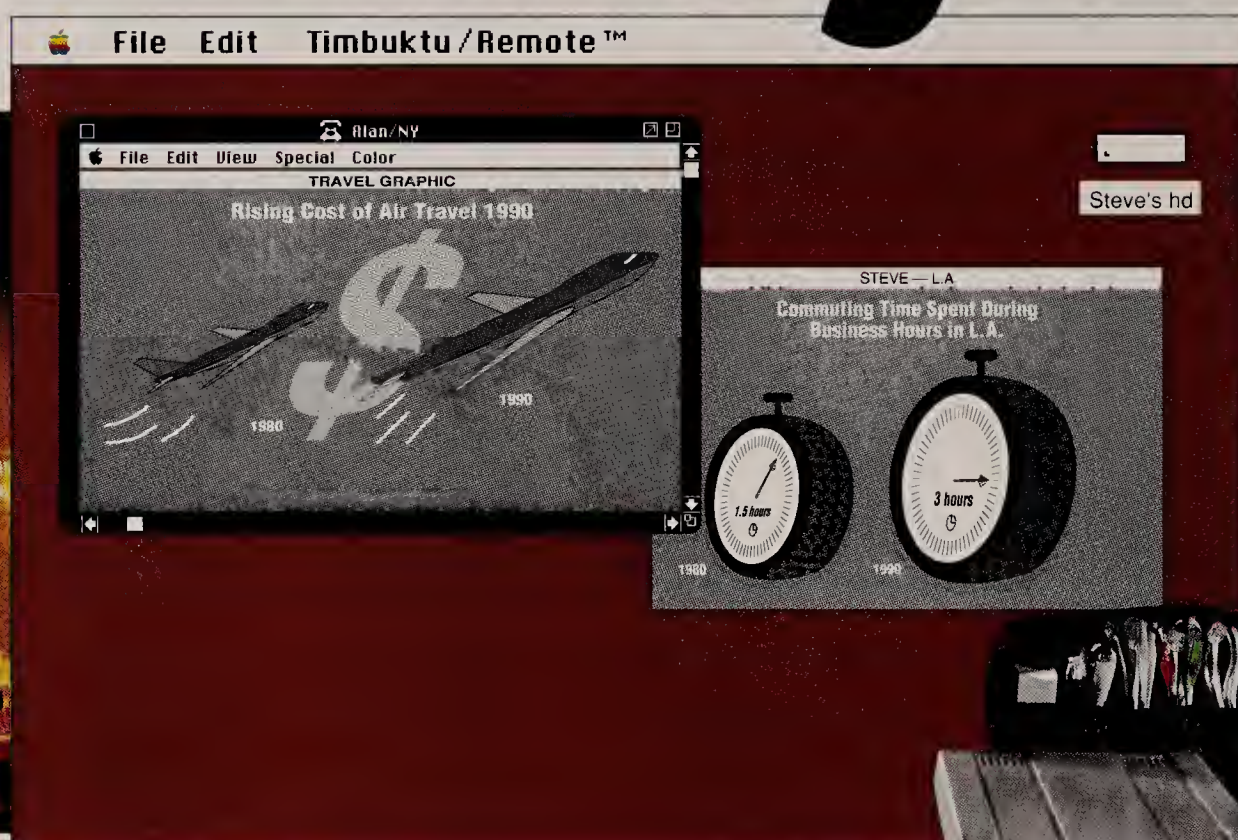
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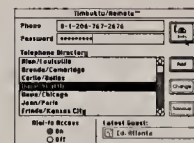
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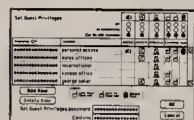
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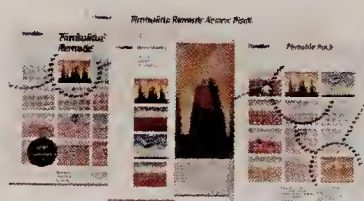
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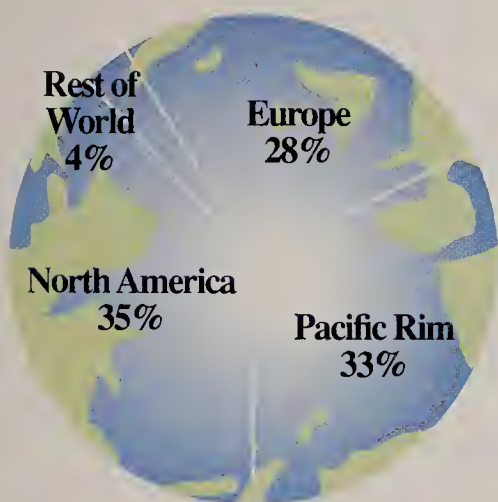
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Date	Ad Close	Feature Editorial	Show Distribution	Special
Jan. 7	Dec. 19*	Buyer's Guide: Ethernet-to-token-ring gateways	MacWorld Expo	
Jan. 14	Jan. 2	Technologies of the Future: SONET	ICA Winter Conference	Harvey
Jan. 21	Jan. 9	Evaluating IBM's TCP/IP and OSI Connectivity		
Jan. 28	Jan. 16	1. Annual Salary Survey 2. Buyer's Guide: IBM-to-DEC connectivity products	ComNet '91 Network Computing Forum	ISDN Guide Lead Service
Feb. 4	Jan. 23	Buyer's Guide: Interexchange carrier net. mgt. sys.		
Feb. 11	Jan. 30	1. Fault-tolerant networking 2. FDDI update	NetWorld '91 Boston	LAN/WAN Integration Lead Service
Feb. 18	Feb. 6	Trends Reshaping Networks: Image processing		
Feb. 25	Feb. 13	Buyer's Guide: Satellite networks		
Mar. 4	Feb. 20	Dealing with systems integrators	Windows & OS/2	Harvey
Mar. 11	Feb. 27	Buyer's Guide: Intelligent wiring hubs	Cebit '91	
Mar. 18	Mar. 6	1. Evaluating ISDN options 2. Comparing tariff information services	Supercomm	Lead Service
Mar. 25	Mar. 13	Buyer's Guide: Electronic mail software and services		
Apr. 1	Mar. 20	Trends Reshaping Networks: EDI		
Apr. 8	Mar. 27	Buyer's Guide: LAN operating systems		
Apr. 15	Apr. 3	Standards update		
Apr. 22	Apr. 10	Buyer's Guide: Interexchange carrier digital private-line services		
Apr. 29	Apr. 17	Twisted-pair networks		
May 6	Apr. 24	Buyer's Guide: X.25 packet switches	Dexpo South DCI/NW Financial Nets	Harvey
May 13	May 1	Trends Reshaping Networks: Security	GlobalNet	Lead Service
May 20	May 8	Virtual networks update		
May 27	May 15	SNA update		
June 3	May 22	1. Buyer's Guide: Bridges/routers 2. Survey: Critical Issues Facing Users	ICA	Lead Service
June 10	May 29	Buyer's Guide: Bypass equipment		
June 17	June 5	Voice processing		
June 24	June 12	Buyer's Guide: SNMP management tools	PC Expo	

**Early close due to holiday scheduling.*